STEM Early College Expansion Partnership (SECEP)

Baseline/Current Status Report

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Introduction

This report presents findings of a baseline/current status study of the STEM Early College Expansion Partnership (SECEP) project. The National Center for Restructuring Education, Schools and Teaching (NCREST), the managing organization for SECEP, in collaboration with the leadership from partnering organizations Middle College National Consortium (MCNC) and Jobs For the Future (JFF), identified key topics for which baseline and current status information were needed to successfully move forward in SECEP planning and implementation across the schools and districts. The primary purpose of this report is to provide information on participating schools and districts, in order to: 1) inform the design and implementation of SECEP, and 2) provide current status and baseline data on the project and outcomes.

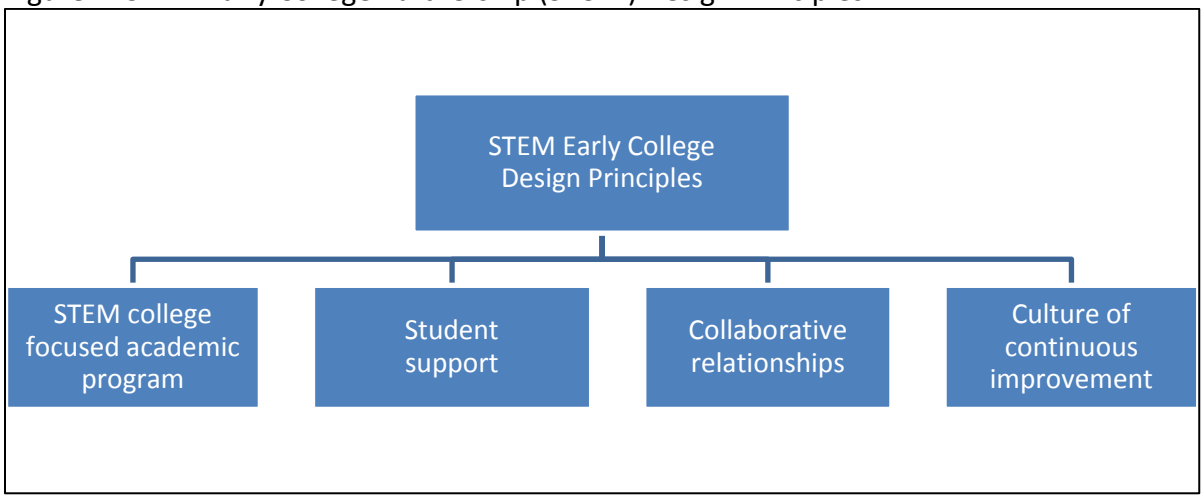
The baseline/current status study was conducted using several methods: analyzing publicly available school and district data, administering brief online surveys, conducting interviews, and reviewing relevant meeting notes. These data were analyzed and used in writing this report.

STEM Early College Expansion Partnership (SECEP)

The STEM Early College Expansion Partnership (SECEP) – a five-year project funded by the United States Department of Education i3 Innovations Grant – proposes to improve STEM education and college readiness in participating school districts in Michigan and Connecticut by increasing high-quality professional development for teachers in STEM subjects and providing students with related STEM and college course-taking opportunities.

Over five years, SECEP will strive to improve STEM education for 22,000 high-need middle and high school students and boost access to relevant college courses by increasing the number of students enrolling in dual credit STEM courses and pursuing postsecondary credentials. SECEP is guided by the STEM Early College core design principles shown in Figure 1.

Figure 1: STEM Early College Partnership (SECEP) Design Principles



Source: STEM Early College Expansion Partnership.

SECEP aims to implement STEM Early College designs that significantly increase the success of underrepresented and high-need students by:

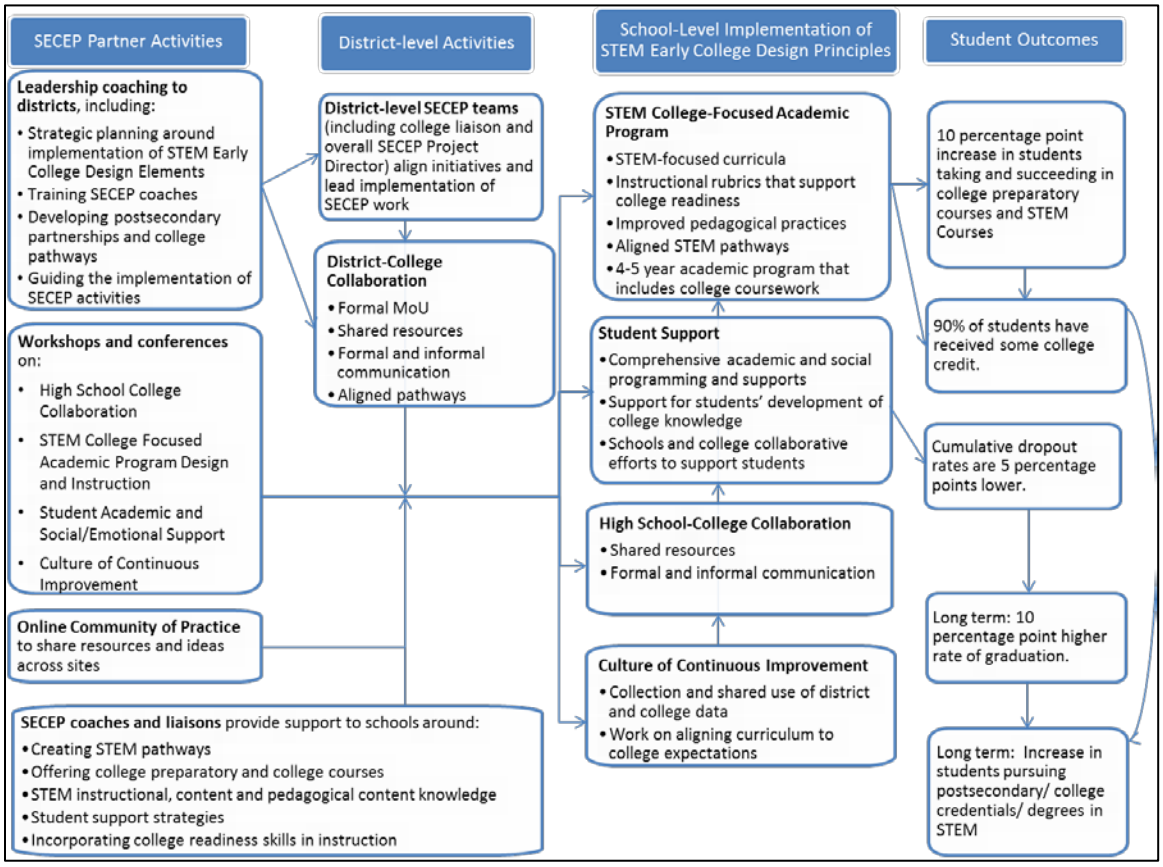
- Supporting schools in the development of a relevant and rigorous college and career ready program of study, and a comprehensive academic and social-emotional support system to help students achieve success in college preparatory high school and college courses, with an emphasis on STEM fields of study.

- Delivering professional development and coaching to improve the effectiveness of STEM teachers via activities that build STEM and pedagogical content knowledge through strategies such as problem-based learning and project-based learning.

- Developing school, district, and college partnerships to fully implement the STEM Early College design through alignment of high school and college coursework, professional development, school improvement initiatives, and a range of resources tied to the Early College model and STEM education.

The SECEP logic model, shown in Figure 2, summarizes the SECEP activities at the partner and district levels, implementation at the school-level, and student outcome goals.

Figure 2: STEM Early College Partnership (SECEP) Logic Model



Source: STEM Early College Expansion Partnership.

SECEP Managing Partner Organizations

The SECEP project involves multiple organizations. The National Center for Restructuring Education, Schools and Teaching (NCREST) manages the overall SECEP project, and together with the two partnering organizations – Jobs for the Future (JFF) and the Middle College National Consortium (MCNC) – provide professional development support and coaching to SECEP district and school-level teams in Michigan and Bridgeport. A SECEP leadership team, consisting of NCREST, JFF, and MCNC representatives, meets on a monthly basis to ensure ongoing communication and sharing of good practices among partnering organizations.

NCREST is located at Teachers College, Columbia University and has been involved in research, data support, and professional development work on middle and early colleges for over a decade. As the managing organization for the overall SECEP project, NCREST is leading the coordination and communication of project implementation, data support, and professional development across the partnering organizations. According to the NCREST leadership,

> *NCREST is strongly committed to the success of the SECEP project. We believe that students engaged in middle and early colleges are transformed and learn to experience themselves as successful in college and in life. With the STEM focus in SECEP, students will have the opportunity to engage in rigorous, project-based learning that prepares them for postsecondary education and jobs in emerging career fields. Teachers College faculty bring outstanding, well-researched resources to enhance this effort.*

The MCNC is collaborating with the Center for Middle/Early College Partnerships at Mott Community College to provide leadership and coaching for the SECEP project in Michigan. Together, they have been providing technical assistance to middle early college schools in Michigan for several years with support from state and foundation grants. Based on their work supporting enhanced dual enrollment systems, the MCNC team is looking to "push that work forward" in implementing SECEP. An MCNC leader/coach pointed out that Early College designs and STEM were not necessarily new concepts for schools, but blending the two components – STEM and Early College – is the "work."

> *[All the schools] knew what middle early colleges were. We had started the dual enrollment enhancement work. The attraction was that … Michigan has jobs to offer so schools were open to getting kids ready for targeted jobs and being prepared, 'We're open to being helped.' All the school districts had dual enrollment with schools, so it's not that new to them. Incorporating the STEM part is the work. They're doing STEM but not in this way.*

Like the MCNC team, JFF – partner organization for Bridgeport SECEP – has been supporting early colleges for more than a decade through various federal and foundation grants. In addition to the SECEP work in Bridgeport, JFF is also working with districts in Denver, Colorado and Texas on STEM Early College reforms as part of another federal i3 grant. The JFF team is taking the professional development support approach they've used in other large, urban

school districts, and applying it to SECEP implementation in Bridgeport. As one JFF leader emphasized, "It's all about good instruction, leadership, and alignment." JFF worked with the Bridgeport district prior to the SECEP grant through the Gates-funded IPD grant, which focuses on structuring professional development in a relevant and meaningful way. Therefore, a goal early on was to integrate the SECEP and IPD projects. A JFF leader described the importance of connecting the core aspects of professional development:

> *We wanted to show [the Bridgeport district] that this wasn't something separate. It's all about good instruction and leadership. But it's not that they're using the same language – IPD, i3, SECEP, they're not as familiar with the terms. But they are doing the work. […] Our goal is building capacity with the leaders and teachers since we have to leave later. Instructional coaches in the district, JFF coaches work with them. We work with instructional coaches in the classroom. It's not a separate PD. Our vision has always been working with coaches and working with teachers.*

Baseline/Current Status Study Goals and Key Questions

With support from partnering organizations – NCREST, MCNC, and JFF – the STEM-focused Early College design allows each school to develop a unique learning environment that reflects local contexts, interests, and needs.

The baseline/current status report is designed to address a series of questions about the current status and scope of STEM initiatives and college course-taking opportunities across participating schools and districts, with implications for ongoing STEM Early College program design, professional development and coaching, and collaborative relationship development. These questions include:

1) What are the characteristics of SECEP schools and students?
2) What are the outcomes for SECEP schools and students?
3) What is the status of other STEM initiatives or programs at the schools?
4) What is the status of college course-taking at the high schools?
5) What is the status of high school-postsecondary relationships and other partnerships?
6) What type of collaboration exists between high schools and feeder middle schools?
7) What are key areas of need for professional development in STEM and Early College?

Methods

The baseline/current status study focused on aspects of STEM Early College and professional development, using a small-scale, mixed-methods design.

Data Collection and Analysis

The following data sources were used for the baseline/current status study:

Document Review – Between August and November 2014, we reviewed a range of documents in order to obtain baseline profile information about the participating schools and students located across four districts in Michigan and one district in Connecticut. We used public databases and summary reports available through the Connecticut and Michigan Department of Education websites to compile relevant data points and create charts and figures on the SECEP schools. We also reviewed agendas, minutes, and notes from selected relevant meetings (e.g., professional development, planning meetings) to better understand the context and development of project implementation.

Surveys – During the month of October 2014, we administered a short online survey via Survey Monkey to all SECEP principals, one for middle schools and another for high schools. The survey items were similar except that the latter survey included additional questions about college course-taking. The goal of the survey was to collect basic information about the current status of targeted STEM education and college course-taking across the schools. Of the 34 SECEP schools[1], 26 high school and middle school principals completed the survey, resulting in a 76% response rate. Fourteen of the 16 high schools (88%) and 12 of the 18 middle schools (66%) were represented in the survey data. The survey data were reviewed and analyzed using a statistical software program. For the purposes of this report, the data were primarily disaggregated by middle and high school.

Interviews – Lastly, we conducted a total of five interviews with SECEP leaders from JFF and MCNC and district staff in Michigan between October and November 2014. We developed semi-structured protocols to guide the phone interviews, which lasted about 45-60 minutes. Interviewees were asked to share their experiences in supporting or coordinating the SECEP project implementation, and describe the current status of STEM and college course-taking features in the schools/districts, as well as professional development needs. The interview data supplemented the survey data from the school principals, providing more nuanced information on the schools' current status and potential areas for support.

[1] Two of the high schools (Bark River-Harris and Dryden) serve middle and high school students, and one school (Nah Tah Wahsh Public School Academy) serves students in grades K-12. Surveys were targeted and administered to leaders at both the high school and middle school level.

Findings

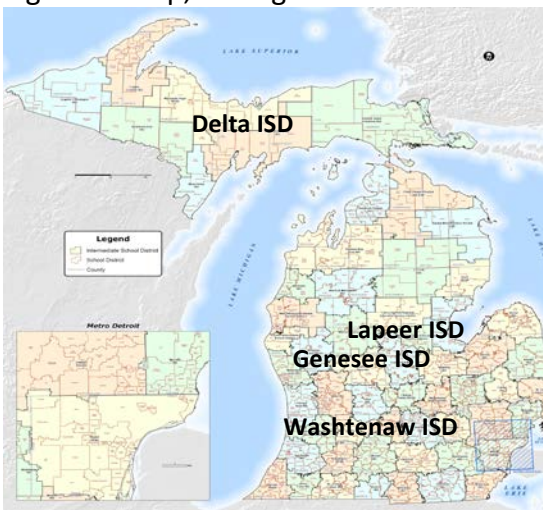
Some results of the baseline/current status study were as expected, while other aspects provide useful insights for the SECEP project team to consider in planning relevant supports to strengthen capacity across the schools, districts, and partnering organizations. In this section, we present findings from the study. First, we describe SECEP school characteristics and baseline data on student outcomes. Second, we highlight data on STEM and Early College features across the SECEP schools. Lastly, we conclude with professional development needs and some early accomplishments and challenges tied to SECEP.

SECEP School and Student Characteristics

SECEP serves a total of 34 schools in Michigan and Connecticut 25 Michigan schools (12 middle schools and 13 high schools)[2] across four intermediate school districts (ISDs), and nine Connecticut schools (six middle schools and three high schools from the Bridgeport district). Please refer to Appendix A and Appendix B for a complete list of SECEP high schools and middle schools and school-level enrollment information, grade levels served, free/reduced lunch eligibility, and other demographic data.

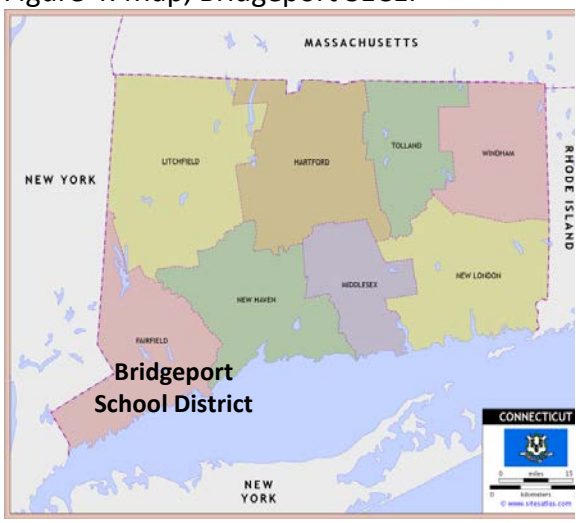
Location – In Michigan, three of the SECEP intermediate school districts are clustered in southern Michigan and the Delta-Schoolcraft ISD schools are located in the Upper Peninsula (see Figure 3). In Connecticut, the nine SECEP schools are all located in the Bridgeport school district, in the city of Bridgeport which is located in the southern part of the state (see Figure 4).

Figure 3: Map, Michigan SECEP



Source: Michigan Department of Education.

Figure 4: Map, Bridgeport SECEP



Source: sitesatlas.com

[2] Two of the high schools (Bark River-Harris, Dryden) serve middle and high school students, and one school (Nah Tah Wahsh Public School Academy) serves grades K-12. The three schools are included on both high school and middle school tables in Appendix A and Appendix B.

While the Bridgeport, Connecticut schools are located in a midsize city, the Michigan schools include rural, town, and suburban locales as classified by the U.S. Department of Education. Table 1 provides the locales of participating ISDs/districts.

Table 1: SECEP Michigan and Bridgeport School District Locale Descriptions[3]

District/ISD and State	Locale Description Code*
Delta-Schoolcraft, Michigan	Rural: Remote, or Town: Remote
Genesee, Michigan	Suburb: Large
Lapeer, Michigan	Rural: Fringe, or Town: Distant
Washtenaw, Michigan	Suburb: Large
Bridgeport, Connecticut	City: Midsize

Source: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics (NCES).
**Rural, Remote* = Census-defined rural territory more than 25 miles from an urbanized area and also more than 10 miles from an urban cluster. *Town, Remote* = Territory inside an urban cluster more than 35 miles from an urbanized area. *Rural, Fringe* = Census-defined rural territory less than or equal to 5 miles from an urbanized area, as well as rural territory less than or equal to 2.5 miles from an urban cluster. *Town, Distant* = Territory inside an urban cluster more than 10 miles and less than or equal to 35 miles from an urbanized area.

Grade levels served – In terms of grades served across the SECEP high schools, most (81%) have students enrolled in 9th-12th grades, while two schools serve 7th-12th grades and one school begins at Kindergarten and goes through 12th grade (see Figure 5).

Figure 5: Grade Levels, SECEP High Schools

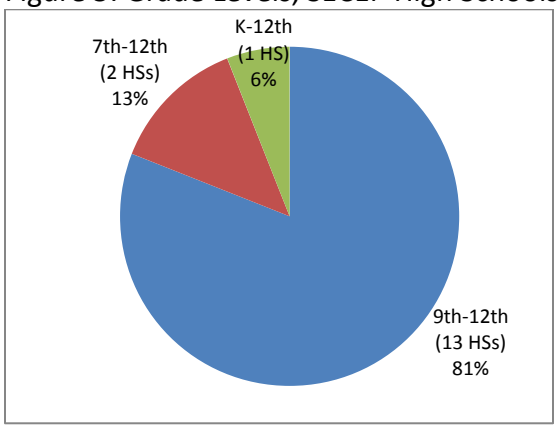
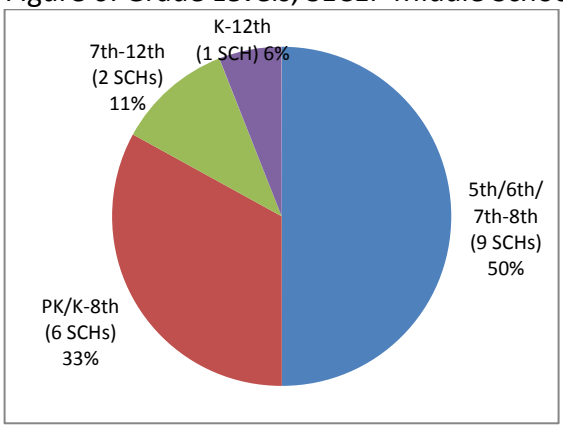


Figure 6: Grade Levels, SECEP Middle Schools



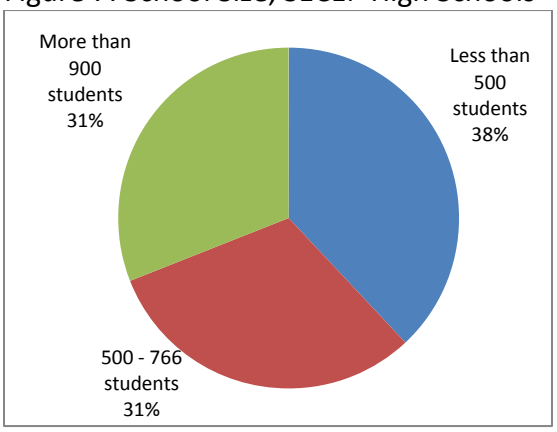
Sources: Connecticut State Department of Education, Michigan Center for Educational Performance and Information.
Note: The two high schools serving grades 7-12 and the one high school serving grades K-12 shown in Figure 5 are also included in the cluster of middle (feeder) schools accounted for in Figure 6.

As shown in Figure 6, for the middle schools which feed into SECEP high schools, there is slightly more grade level variation. Half of the schools enroll students starting in grades 5, 6, or 7 through grade 8 and one-third, reflecting all six Bridgeport middle schools, serves students beginning in Pre-Kindergarten or Kindergarten through grade 8. Three of the feeder schools also serve high school students.

[3] NCES locale codes are based on an address's proximity to an urbanized area (a densely settled core with densely settled surrounding areas). This is a change from the original system based on metropolitan statistical areas. The new system urban-centric locale code system uses four major territory classification types: city, suburban, town, and rural. Each of the four territory types has three subcategories. For city and suburb, these are gradations of size – large, midsize, and small. Towns and rural areas are further distinguished by their distance from an urbanized area. They can be characterized as fringe, distant, or remote. http://nces.ed.gov/ccd/rural_locales.asp

Size – School size, as measured by the total number of students enrolled, was fairly evenly distributed into three groups across the SECEP high schools. As shown in Figure 7, 31% of the high schools enrolled more than 900 students. A slightly bigger proportion of the schools (38%) enrolled less than 500 students. Lastly, the third cluster of schools (31%) enrolled 500-766 students.

Figure 7: School Size, SECEP High Schools



Sources: Connecticut State Department of Education, Michigan Center for Educational Performance and Information.

The middle schools varied in terms of school size more than their SECEP high school counterparts. The Pre-K or Kindergarten through grade 8 schools enrolled anywhere Between 655 and 1,124 students. Even the more traditional grades 5, 6, or 7 through 8 middle schools varied in size from 353 total students enrolled to 1,052 students.

SECEP Students and Outcomes

The schools participating in the SECEP project are considered high need schools. Aligned with the U.S. Department of Education i3 Grant criteria in defining *high needs*, SECEP uses the following definition for high need students: 1) low income, as measured by free or reduced lunch eligibility, and/or 2) performing below the proficiency level on state math and/or science tests (Please refer to the NCREST SECEP i3 proposal for more information).

Free/Reduced lunch eligibility – In Bridgeport, Connecticut, more than 95% of the students at all of the SECEP middle and high schools are free/reduced lunch eligible, as shown in Figure 8. There is more variation among SECEP schools in Michigan (see Figure 9). The majority of Michigan schools (92%) have one-third or more students identified as free/reduced lunch.

Figure 8: Free/Reduced Lunch, Bridgeport

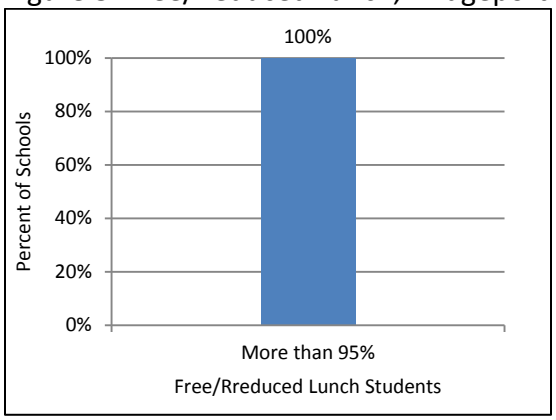
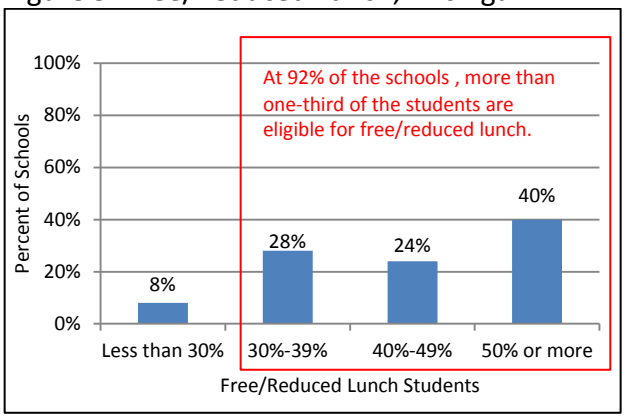


Figure 9: Free/Reduced Lunch, Michigan



Sources: Connecticut State Department of Education, Michigan Center for Educational Performance and Information

Academic proficiency – For almost all the SECEP schools, the majority of their students are struggling to meet the standard proficiency levels on state math and science assessments.

Across all Michigan SECEP middle schools, at least half or more of their 8th grade students performed below the proficiency level on the state assessment (MEAP) for math and science. As shown in Table 2, the minimum and maximum percentages of a school's student population performing below proficient indicate that even for schools with the lowest percent of 'below proficient' students, 50% and 72% of their students performed below proficient in math and science respectively.

Table 2: Grade 8 State Assessment (MEAP), Michigan SECEP Middle Schools, 2013-14

State Grade 8 Test, 2013-14: Michigan Educational Assessment Program (MEAP)	Percent of Schools with Half or More Students 'Below Proficient' (N=11)	Range for Percent of School's Students 'Below Proficient'	
		Min	Max
MEAP Math	100%	50%	90%
MEAP Science	100%	72%	90%

Source: Michigan Center for Educational Performance and Information

For the Bridgeport SECEP middle schools, at least half or more of the 8th graders performed below the proficiency level on math and science assessments (CMT) at 67% and 86% of the schools respectively (see Table 3). The minimum and maximum percentages of a school's student population performing below proficient indicate that although a few schools had a low percentage of students below proficiency (4% and 29%), most of the schools had close to half or more of their students scoring below proficient.

Table 3: Grade 8 State Assessment (CMT), Bridgeport SECEP Middle Schools, 2012-13

State Grade 8 Test, 2013-14: Connecticut Mastery Test (CMT)	Percent of Schools with Half or More Students 'Below Proficient' (N=6)	Range for Percent of School's Students 'Below Proficient'	
		Min	Max
CMT Math	67%	4%	49%
CMT Science	86%	29%	69%

Source: Connecticut State Department of Education

Furthermore, when comparing CMT outcomes to the state goal benchmark, rather than the proficiency cut-off mark, higher percentages of students were below proficient across all schools. Please refer to Appendix C for middle school-level assessment information for Bridgeport and Michigan.

The assessment results are not that different for SECEP high schools. As shown in Table 4, in Michigan, the majority (half or more) of 11th grade students across all (100%) of the SECEP schools performed below the proficiency level on the state assessment (MME) for math and science. In addition, 64% and 58% of the students respectively, performed below proficient even at schools with the lowest percent of below proficient students. Please refer to Appendix D for high school-level assessment information for Michigan.

Table 4: High School State Assessment (MME), Michigan SECEP High Schools, 2013-14

State Grade 11 Test, 2013-14: Michigan Merit Exam (MME)	Percent of Schools with Half or More Students 'Below Proficient' (N=13)	Range for Percent of School's Students 'Below Proficient'	
		Min	Max
MME Math	100%	64%	90%
MME Science	100%	58%	90%

Source: Michigan Center for Educational Performance and Information

For Bridgeport SECEP high schools, the state assessment patterns were similar to Michigan where all the schools had half or more of their students performing below proficient. Furthermore, as shown in Table 5, the range of percentages show that 53% and 56% of the students performed below proficient, even at schools with the lowest percent of below proficient students in math and science respectively.

Table 5: High School State Assessment (CAPT), Bridgeport SECEP High Schools, 2012-13

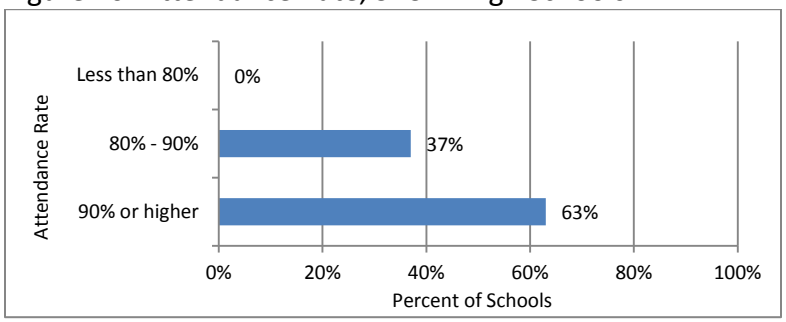
State Grade 10 Test, 2013-14: Connecticut Academic Performance Test (CAPT)	Percent of Schools with Half or More Students 'Below Proficient' (N=3)	Range for Percent of School's Students 'Below Proficient'	
		Min	Max
CAPT Math	100%	56%	77%
CAPT Science	100%	53%	72%

Source: Connecticut State Department of Education

According to ACT (2014), although many high school students are interested in STEM, improved math and science achievement is needed to foster success in STEM studies and careers.

Graduation rates – Graduation rates are fairly high across most SECEP schools where the majority of schools had an 80% or higher 4-year cohort high school graduation rate, and only three schools were below at 62%, 70%, and 75% respectively. Although graduation rates are fairly strong for most schools and are similar or slightly higher than their district average, the academic proficiency outcomes summarized in the previous section suggest that graduation rates need to be considered in conjunction with other outcomes of academic readiness and achievement. Please refer to Appendix F for school-level graduation rates and Appendix G for dropout rate information.

Figure 10: Attendance Rate, SECEP High Schools

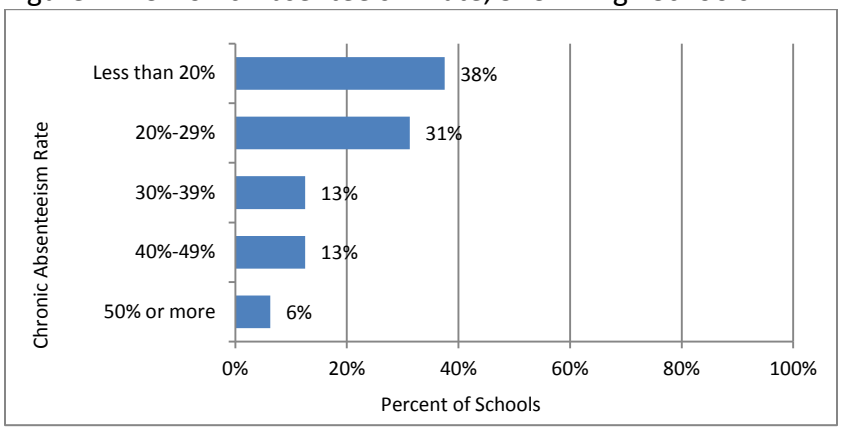


Attendance – Attendance rates are fairly high across all the SECEP high schools. As shown in Figure 10, all the schools had an 80% or higher attendance rate, and close to two-third of the schools (64%) had a 90% or higher attendance rate.

Sources: Connecticut State Department of Education, Michigan Center for Educational Performance and Information

However, chronic absenteeism rates were more distributed across schools (see Figure 11).

Figure 11: Chronic Absenteeism Rate, SECEP High Schools



Research has shown that chronic absenteeism is a strong predictor of dropping out of school (Allensworth & Easton, 2007; Balfanz & Byrnes, 2013). Please refer to Appendix H for school-level attendance rates and chronic absenteeism information.

Note: "Chronic Absenteeism" is defined as having missed more than 10 days of school. *Michigan: The U.S. Department of Education defines students as chronically absent if they have missed more than ten days of school within a given school year. Though the U.S. Department of Education defines truancy as more than ten unexcused absences, these charts do not differentiate between excused and unexcused absences. Connecticut: District/School Chronic Absenteeism Rate = A measure of how many students miss at least 10 percent of days enrolled for any reason including excused and unexcused absences and days absent due to out of school suspensions served.*
Sources: Connecticut State Department of Education, Michigan Center for Educational Performance and Information

STEM Initiatives and Programs

The majority of the findings in this section forward are based on survey responses from SECEP baseline/current status survey of school leaders and interviews with district team members. These data help to highlight STEM and Early College features that already in place or in need of development across the participating SECEP schools.

The SECEP project has introduced a targeted STEM initiative and programming to many of the participating SECEP schools. Less than half (43%) of the high schools had other STEM initiatives in place aside from the SECEP project (see Figure 12). The lack of STEM-focused initiatives is even more noticeable among the middle schools where only 17% had non-SECEP STEM programs in place (see Figure 13).

Figure 12: STEM in High Schools

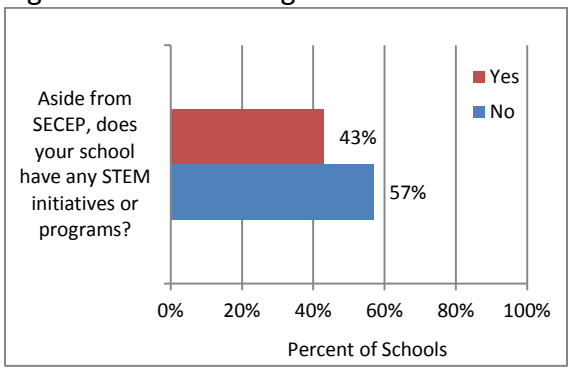
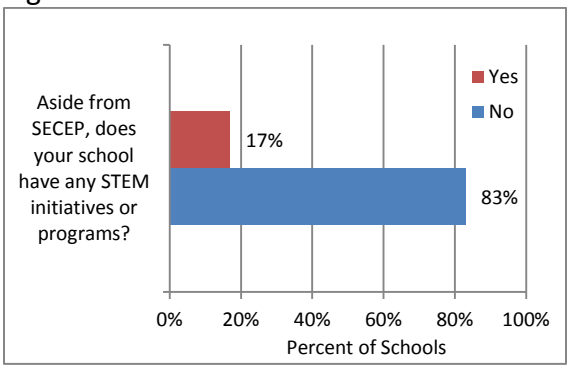


Figure 13: STEM in Middle Schools



The SECEP district coordinators were also in agreement with most of the school principals and indicated that other STEM initiatives or programs were not widely implemented. The following sentiment was expressed by one of the coordinators:

> *Some of our local schools have done a few things, but to say that STEM across the curriculum exists, we are far away from that. We are hoping that this will happen through the grant.*

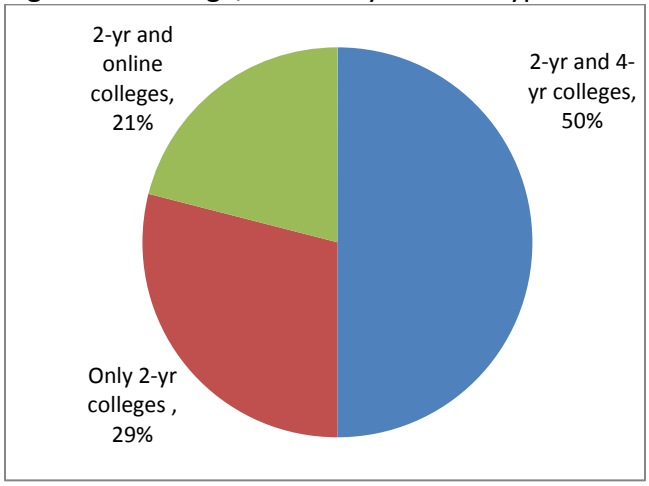
Examples given of other school-based STEM initiatives included the following: a robotics program/team, a STEM-themed small learning community school-within-a-school, Project Lead The Way, an engineering camp, programs through the district math and science center, a NASA project-based learning partnership, Advanced Placement course-taking in science and math subjects, and an iPD grant aimed at redesigning professional development systems to increase overall teacher and student success across the subjects.

In addition, various external organizations are working with SECEP schools and their students on STEM education or experiences. Colleges and universities are providing STEM-related college course-taking opportunities for students, in addition to general subject courses. Other external organizations supporting STEM at schools included FIRST (For Inspiration and Recognition of Science and Technology), Toyota, an engineering company sponsor for a school's robotics team, and the local career and technical center. A few of the schools also indicated that they are considering working with stem.org in the future.

College Course-Taking

Since participation in college coursework is a key feature of the Early College model, we wanted to know the current status of college course-taking across the SECEP high schools, such as the types of colleges and universities where students take courses, college course-taking cohort designs, instructor type, and the extent of college course-taking among students.

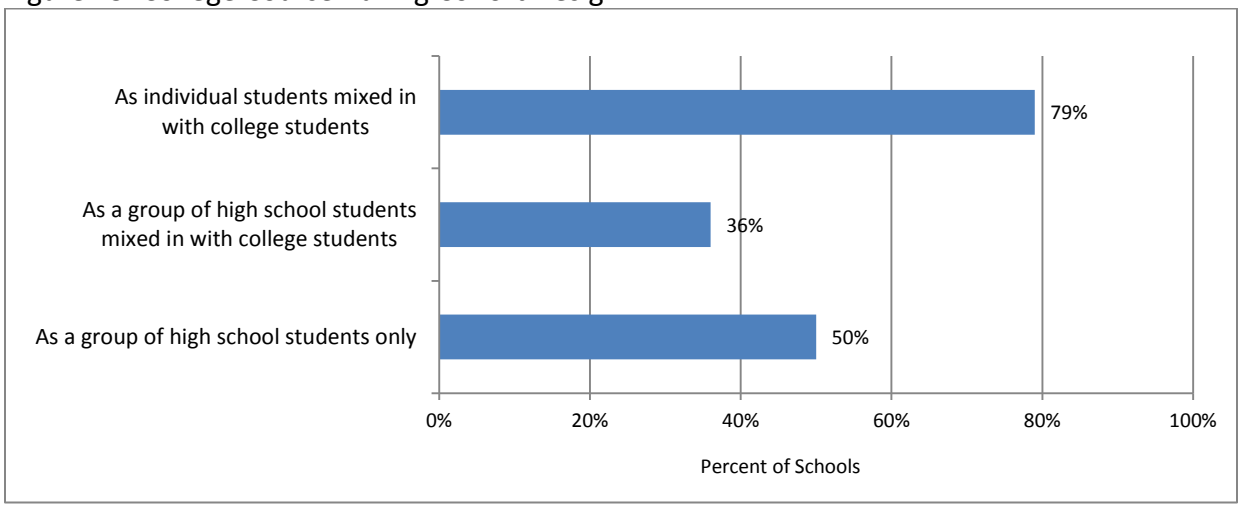
Figure 14: College/University Partner Type



Students at SECEP schools take college courses at multiple types of colleges and universities. As shown in Figure 14, both 2-year and 4-year colleges provide dual enrollment courses in half of the schools (50%), and 29% of the schools only partner with a 2-year college. Three schools (21%) indicated that online course offerings from other colleges were also available in addition to courses at their 2-year college partner institutions.

SECEP schools use different cohort designs for their students in college courses. School leaders were asked to select all the different ways in which students enroll in college courses. Figure 15 shows that individually enrolling students in college courses mixed in with college students is the most popular college course-taking design (79% of schools), followed by enrolling students as a group of high school students (50%), and then as a group of high school students mixed in with other college students (36%).

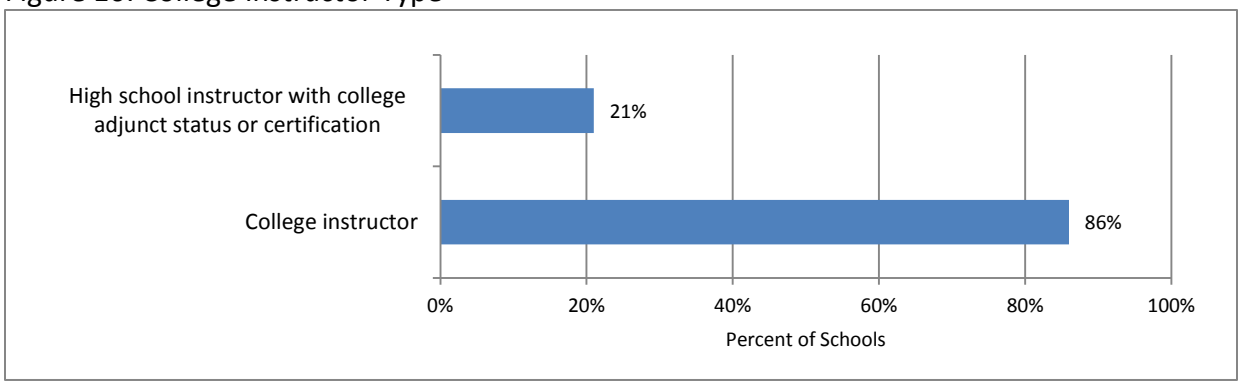
Figure 15: College Course-Taking Cohort Design



Note: The percentage total does not equal 100% since some schools selected more than one option.

The large majority of schools (86%) reported that high school students are typically enrolled in college courses taught by college instructors, while three of the schools (21%) indicated that college-level courses are taught by high school instructors certified to teach the college courses (see Figure 16).

Figure 16: College Instructor Type



Note: The percentage total does not equal 100% since some schools selected more than one option.

College course-taking among some students occurs across all the SECEP high schools, and on a smaller scale for most of the schools. For the majority of schools (71%), students taking college courses do so in the upper grades (11 and 12), and typically take one or two courses during the school year (see Table 6).

Table 6: College Course-Taking Summary, SECEP High Schools

High School*	College Course-Taking, 2013-14			
	Grade levels of students	Number of students	Percent of Students**	Number of Courses Typically Taken
1	12	15	1%	1
2	10, 11, 12	22	2%	1
3	11, 12	17	2%	1
4	11, 12	17	3%	4
5	11, 12	20	4%	2
6	10, 11, 12	52	5%	1
7	11, 12	100	5%	2
8	11, 12	50	5%	2
9	10, 11, 12	47	6%	2
10	11, 12	3	7%	2
11	9, 10, 11, 12	51	11%	1
12	11, 12	33	16%	4
13	11, 12	75	23%	2
14	11, 12	97	N/A	2

*High schools are listed from low to high percent of students who took college courses.
*Percentages were calculated by dividing the number of college course-taking students by the total number of students enrolled in the school.
Note: The data presented in the table are based on SECEP Baseline/Current Status survey data.

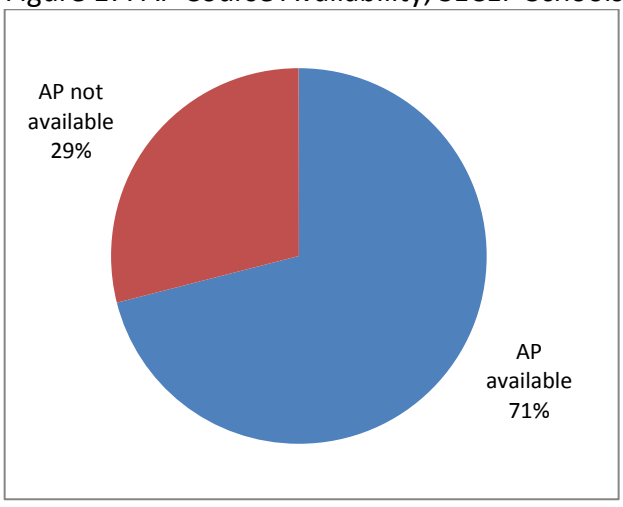
To calculate the percentage of students taking college courses (dual enrollment participation), we reviewed two data sources: publicly available data from state websites and survey data provided by principals. The percentages calculated from the two data sources were fairly similar. The data shown in Table 6 is from the survey. Please refer to Appendix I for school-level dual enrollment participation information analyzed using publicly available state data.

Advanced Placement (AP)

In addition to dual enrollment, we also wanted know about Advanced Placement (AP) course offerings since these provide alternative ways for students to experience college-level courses. As shown in Figure 17, the majority of SECEP high schools (71%) offer AP courses to their students.

The four SECEP high schools that do not offer AP courses were also the schools with the highest percent of students enrolled in college courses (refer back to Table 6).

Figure 17: AP Course Availability, SECEP Schools



For the SECEP schools that offer AP coursework, a variety of subjects are offered. As shown in Table 7, AP English (Composition, Literature or Language) is offered at all the schools, and AP Calculus and at least one AP science course is offered at all but two of the schools. Table 7 also indicates there is a fair amount of students taking AP courses at some of the SECEP schools.

Table 7: AP Coursework Summary, SECEP Schools

High School*	AP Subjects Offered	Number of Students Who Took At Least 1 AP course, 2013-14	Percent of Students Who Took At Least 1 AP course, 2013-14**
1	Composition & Lit	0	0%
2	English, Spanish	30	3%
3	Composition & Lit, History, Spanish, Biology, Chemistry, Statistics, Calculus	60	6%
4	Composition & Lit, US History, Chemistry, Calculus	40	6%
5	English Literature, English Language, US History, Spanish, Calculus	80	7%
6	English Literature, English Language, US History, Government, Psychology, Spanish, Biology, Chemistry, Calculus	150	8%
7	Composition & Lit, American History, World History, Government, Psychology, Biology, Chemistry, Statistics, Calculus	100	13%
8	Composition & Lit, US History, World History, Physics, Calculus	75	15%
9	English, World History, US History, Psychology, Biology, Chemistry, Calculus	226	15%
10	English, Biology, Chemistry, Statistics, Calculus	150	20%

*High schools are listed from low to high percent of students who took at least 1 AP course.
**Percentages were calculated by dividing the number of AP course-taking students by the total number of students enrolled in the school.

Partnerships

Developing and cultivating partnerships across organizations is key aspect of SECEP, and we wanted to better understand the status of school-college partnerships, as well as collaboration between high schools and middle schools. All the SECEP high schools are already connected to college and university partners through college course-taking opportunities for their students. A list of the 12 colleges and universities where students take college courses is provided in Table 8.

Table 8: College Partners, SECEP schools

Colleges/Universities where high school students take college courses	
Bridgeport	• Fairfield College • Housatonic Community College • University of Connecticut
Michigan	• Baker College • Bay d'Noc College • Eastern Michigan University • Kettering University • Macomb Community College • Mott Community College • St. Clair Community College • University of Michigan, Ann Arbor • University of Michigan, Flint • Washtenaw Community College

All SECEP high schools indicate meeting with their college partner. In order to gauge the nature of these meetings, we asked school leaders how often they met with their college partner to discuss the following topics: *High school readiness, college readiness, student support, student career preparation, STEM education, and professional development coordination*. Their responses are summarized in Table 9.

Table 9: Frequency of High School-College Meetings to Discuss Given Topics

Percent of High Schools that Met This Frequently with College Partner to Discuss the Following Topics (N=14)				
Topic	**Once a year**	**Once a semester**	**Once a month**	**Not indicated**
High school readiness	36% (5)	36% (5)	14% (2)	14% (2)
College readiness	43% (6)	29% (4)	14% (2)	14% (2)
Student support	14% (2)	58% (8)	14% (2)	14% (2)
Career preparation	21% (3)	29% (4)	14% (2)	36% (5)
STEM education	14% (2)	21% (3)	29% (4)	36% (5)
Professional development coordination	29% (4)	14% (2)	14% (2)	43% (6)

The SECEP project is unique in that it involves both high schools and middle schools. The SECEP goal is to prepare students for STEM readiness and college course-taking in middle school while simultaneously working within the high schools. We wanted to know the degree to which high schools and their middle schools meet or communicate with one another.

The majority of high school principals (86%) and middle school principals (67%) reported that meetings did occur between the two entities. Similar to the school-college relationship questions, we asked middle and high school leaders how often they met with their counterpart schools to discuss the following topics: *High school readiness, college readiness, student support, student career preparation, STEM education, and professional development coordination*. As shown in Table 10, high school and middle school principals had a shared perception about the topics they discussed more often and those that occurred less often.

Table 10: Topics Discussed in Middle School-High School Meetings According to Principals

School Perspective	**Topics Discussed Most Often**	**Topics Discussed Less Often**
According to High School Leaders	• Student support • High school readiness • Professional development coordination	• College readiness • Student career preparation • STEM education
According to Middle School Leaders	• Student support • High school readiness • Professional development coordination	• College readiness • Student career preparation • STEM education

Professional Development Needs

Professional development is at the heart of the SECEP project. For the most part, schools have monthly professional development meetings, with many also reporting weekly professional development meetings as well as cluster group meetings by department.

When asked to reflect on their greatest need for professional development tied to STEM and Early College, the majority of the middle school principals who were surveyed identified a need to understand what STEM means and coordinating alignment and integration across subjects. The same areas were noted by the high school principals, in addition to assistance with instructional strategies, as well as understanding data and assessment. Comments from the SECEP principals were classified into four topics and are summarized in Table 11.

Table 11: Analysis of Professional Development Need Responses, SECEP Schools

Topic	Percent of Middle Schools indicating PD need (N=12)	Percent of High Schools indicating PD need (N=14)
Curriculum coordination, integration, alignment with STEM (e.g. STEM definition)	50% (6)	43% (6)
Instructional strategies (e.g. inquiry, interdisciplinary, real world application)	25% (3)	43% (6)
Data understanding and analysis	0%	7% (1)
Student assessment	0%	7% (1)
No response	25% (3)	0%

Individual short answer responses from middle school and high school leaders, regarding the areas of greatest professional development need for their staff, are listed in Table 12.

Table 12: Short-Answer Responses about Professional Development Need, SECEP Schools

Middle Schools	High Schools
• What it is and how to incorporate it into our schedule • A definition of STEM and how to integrate it into the present curriculum • STEM-focused professional development, technology resources • Integrating STEM related activities into content areas • Integrating STEM curriculum into all areas of core content subjects • Building cross-curricular lessons and getting all staff trained/informed • Training on instructional practices related to STEM • Additional PD in math and science instruction in Common Core Standards,	• What STEM instruction looks like • Integrating STEM across the curriculum • Curriculum integration utilizing STEM • Integrating curriculum, accelerating curriculum • Developing an aligned Math curriculum, K through 12. • Curriculum alignment, project based/problem based learning • Instructional strategies • An understanding of instructional strategies and content that students need to be able to access • Learning how to develop, implement inter-disciplinary lessons • Project based learning, Hands-on /real world applications relevant to STEM courses, argument inquiry driven instruction • Inquiry based instruction, project based learning, cultural shifts in thinking

developing performance based tasks, hands-on learning lessons • Scheduling, flexible grouping, resources, lesson development/project ideas.	• Coordination of curriculum among grades 7-12, teaching strategies for teachers to integrate more real world examples into their lessons, helping teachers integrate technology • Next Generation Science Standards (NGSS), ACT prep, Data Analysis • Assessing students

Early Accomplishments and Challenges

The MCNC and JFF leadership also identified some of the overall challenges and needs. For Michigan SECEP, some of the challenges and priorities tied to SECEP implementation include:

- Organizing logistical aspects such as getting the team together.
- Dealing with change in district/school leadership and positions.
- Trying to integrate STEM and Early College effectively.
- Funding concerns related to travel, equipment, and related fees.
- Addressing uneven resources across schools (e.g., stellar science labs vs non-college ready ones).

Despite some of these challenges, the MCNC leadership discussed the SECEP "momentum" and "excitement," and the increased collaboration across schools and organizations.

> *A few people wrote the SECEP proposal but now people are talking about it and knowing it. There's cross pollination among the districts and relationships with the colleges. And we're getting the word out [about STEM Early College] at the state level.*
>
> *The way we're working inter-institutionally – NCREST, TC, MCNC, Michigan Development of Education, etc. makes the technical assistance much deeper; research-based findings rather than gut feelings. This all helps to move districts faster. And that it's a group thing, and another state is doing this. We're not in it alone.*

For the Bridgeport SECEP team, some of the challenges and priorities tied to SECEP implementation include:

- Building a culture of high expectations and college and career readiness.
- Dealing with change in district/school leadership and positions.
- History of low achievement and high poverty among students.
- A need for stronger relationships between the district and postsecondary institutions.
- Strengthening instructional leadership and pedagogy.

The JFF leaders/coaches, together with the Bridgeport district leadership and school principals, are aiming to bring STEM and Early College design aspects together in a more explicit way, through regular communication and collaboration, ongoing support, and thinking differently about STEM.

Led by the former Bridgeport mayor, a consortium of the colleges had been developed by the previous district superintendent. However it was unclear whether the group was still intact. Under the new Bridgeport school district leadership, a council of higher education partners and districts representatives is being planned to increase communication and coordination for college readiness and course-taking for high school students.

Everybody thinks they are familiar with STEM, that it's just science and math courses, and using technology. It's more about problem solving in these areas. A project-based approach is STEM – that's what we have to be sure to integrate into the STEM program. That's the key to success for teachers and students.

Early accomplishments for the SECEP project, as identified by district coordinators, emphasized the value of collaborating across multiple organizations, re-visiting the importance of course sequencing in relation to college readiness, and having relevant and targeted conversations about student achievement.

Some of the biggest successes, I would say, is forcing them to have these conversations… seeking ways to improve math and science, including professional development, looking at a more cohesive program between middle schools and high schools, and including colleges in that conversation. Schools made new associations with colleges.

The fact that the schools are willing to take this on and really re-visit the sequence of courses… once the mission became clear to get students college-ready by their junior year, the new sequencing of courses, it has proven to be received in positive ways by the teachers. I think this will be successful, things will be taken down to junior high more so than in the past.

The biggest successes are getting some of the right people into the room and having some very intentional conversations, getting them to really look at data and what that says of their current performance… [school leaders/teachers] were very humbled to see how low the students' math performance is.

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Appendix A
SECEP High Schools – Enrollment Table, 2013-14

District/ISD	High School	School Information			Student Demographics					Locale	Feeder Middle Schools
		Type	Grlvl	Enrollment	White	Non-White*	Free/Red Lunch	Spec Ed	ELL		
Delta-Schoolcraft Michigan	1. Bark River-Harris Jr/Sr HS	MS+HS	7-12	315	88%	12%	50%	8%	<5%	Rural: Remote	Same school
	2. Escanaba Area Public HS	HS	9-12	766	92%	8%	34%	10%	<5%	Town: Remote	Escanaba JHS
	3. Gladstone Area HS	HS	9-12	456	89%	11%	33%	11%	<5%	Town: Remote	Gladstone Area MS
	4. Nah Tah Wahsh Public School Academy	ES+MS +HS	K-12	171	39%	61% (60% AMIND)	91%	19%	<5%	Not available	Same school
Genesee Michigan	5. Carman-Ainsworth HS	HS	9-12	1483	31%	69% (57% BL, 3% ASN)	62%	15%	<5%	Suburb: Large	Carman-Ainsworth MS
	6. Clio Area HS	HS	9-12	940	94%	6%	44%	10%	<5%	Suburb: Large	Carter MS
Lapeer Michigan	7. Almont HS	HS	9-12	517	96%	5% (4% HSP)	21%	10%	<5%	Rural: Fringe	Almont MS
	8. Dryden Jr/Sr HS	MS+HS	7-12	323	96%	4%	33%	10%	<5%	Rural: Distant	Same school
	9. Imlay City HS	HS	9-12	635	77%	23% (19% HSP, 3% ASN)	45%	8%	<5%	Town: Distant	Imlay City MS
	10. North Branch HS	HS	9-12	763	95%	5%	38%	9%	<5%	Rural: Distant	North Branch MS
Washtenaw Michigan	11. AC Tech	HS	9-12	574	23%	77% (68% BL, 5% HSP)	36%	21%	<5%	Suburb: Large	Ypsilanti Community Middle School, Washtenaw Intl. Middle Academy
	12. STEMM Academy	HS	9-12	202	25%	75% (66% BL, 6% HSP)	34%	20%	<5%	Suburb: Large	
	13. Ypsilanti New Tech HS	HS	9-12	322	28%	72% (61% BL, 7% HSP)	46%	18%	<5%	Suburb: Large	
Bridgeport, Connecticut	14. Bassick HS	HS	9-12	1,114	6%	94% (45% BL, 45% HSP, 4% ASN)	>95%	15%	15%	City: Midsize	-Cesar Batalla MS -Geraldine Johnson MS
	15. Central HS	HS	9-12	1,838	11%	89% (45% BL, 39% HSP, 3% ASN)	>95%	11%	9%	City: Midsize	-Blackham MS -John Winthrop MS
	16. Harding HS	HS	9-12	1,105	6%	94% (42% BL, 52% HSP)	>95%	15%	23%	City: Midsize	-Read MS -Jettie Tisdale MS

*Non-White Race/ethnicity percentages specified for values at 3% or higher.

**SpecEd: 2012-13 data used for Connecticut schools; 2013-14 data were not available.

Data sources: Connecticut State Department of Education - Connecticut Education Data and Research www.ct.gov, Michigan Center for Educational Performance and Information (CEPI) www.michigan.gov.

For locale information: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics (NCES).

Appendix B
SECEP Middle Schools – Enrollment Table, 2013-14

District/ISD	Middle School	School Information			Student Demographics					Locale	Feeding into High School
		Type	Grlvl	Enrollment	White	Non-White*	Free/Red Lunch	Spec Ed**	ELL		
Delta-Schoolcraft Michigan	1. Bark River-Harris	MS+HS	7-12	315	92%	8% (5% AMIND, 5% other)	50%	8%	<5%	Rural: Remote	Same school
	2. Escanaba Area	MS	7-8	375	91%	9% (5% AMIND)	45%	13%	0%	Town: Remote	Escanaba HS
	3. Gladstone Area	MS	6-8	353	89%	11% (9% AMIND)	45%	13%	0%	Town: Remote	Gladstone Area HS
	4. Nah Tah Wahsh	ES+MS+HS	K-12	171	53%	47% (44% AMIND, 3% other)	91%	19%	<5%	Rural: Remote	Same school
Genesee Michigan	5. Carman-Ainsworth	MS	6-8	1052	35%	65% (51% BL,5% HSP,7% other)	74%	15%	1%	Suburb: Large	Carman-Ainsworth HS
	6. George R. Carter	MS	5-8	994	94%	6% (3% HSP)	51%	8%	<1%	Suburb: Large	Clio Area HS
Lapeer Michigan	7. Almont	MS	5-8	499	95%	5% (4% HSP)	21%	10%	1%	Rural: Fringe	Almont HS
	8. Dryden	MS+HS	7-12	323	96%	4% (4% HSP)	38%	11%	0%	Rural: Distant	Same school
	9. Imlay City	MS	6-8	505	76%	24% (22% HSP, 2% other)	55%	9%	7%	Town: Distant	Imlay City HS
	10. North Branch Area	MS	7-8	378	92%	8% (6% HSP)	46%	14%	0%	Rural: Distant	North Branch HS
Washtenaw Michigan	11. Washtenaw Intl. Middle Academy	MS	5-8	168	32%	68% (52% BL,9% HSP,5%ASN)	51%	7%	<5%	Suburb: Large	Ypsilanti New Tech HS; STEMM Academy; University HS
	12. Ypsilanti Community Middle School	MS	5-8	762	24%	76% (67% BL, 6% HSP)	77%	24%	<5%	Suburb: Large	
Bridgeport, Connecticut	13. Read	ES+MS	PK-8	839	10%	90% (39% BL, 48% HSP)	>95%	11%	9%	City: Midsize	North Branch HS
	14. Cesar Batalla	ES+MS	PK-8	1117	4%	96% (21% BL,70% HSP,5% ASN)	>95%	11%	37%	City: Midsize	Bassick HS
	15. Blackham	ES+MS	PK-8	1124	16%	84% (30% BL,48% HSP,5% ASN)	>95%	11%	13%	City: Midsize	Central HS
	16. Winthrop	ES+MS	K- 8	685	27%	63% (34% BL,32% HSP,6% ASN)	>95%	6%	<5%	City: Midsize	Central HS
	17. Jettie S. Tisdale	ES+MS	PK-8	655	3%	97% (53% BL, 42% HSP)	>95%	21%	2%	City: Midsize	Harding HS
	18. Geraldine Johnson	ES+MS	PK-8	833	7%	93% (30% BL,58% HSP,4% ASN)	>95%	13%	16%	City: Midsize	Bassick HS

*Non-White Race/ethnicity percentages specified for values at 3% or higher.

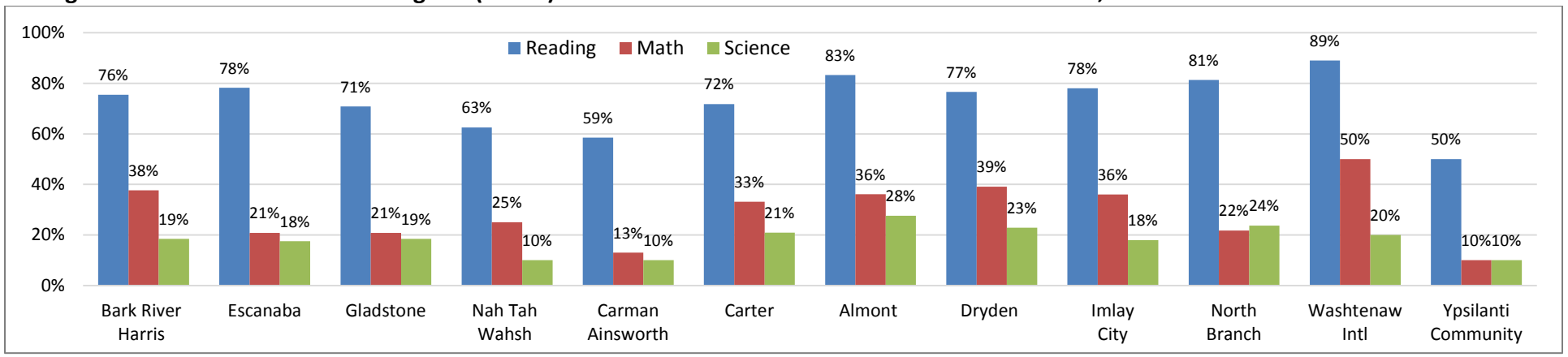
**SpecEd: 2012-13 data used for Connecticut schools; 2013-14 data were not available.

Data sources: Connecticut State Department of Education - Connecticut Education Data and Research www.ct.gov, Michigan Center for Educational Performance and Information (CEPI) www.michigan.gov.
For locale information: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics (NCES).

Appendix C

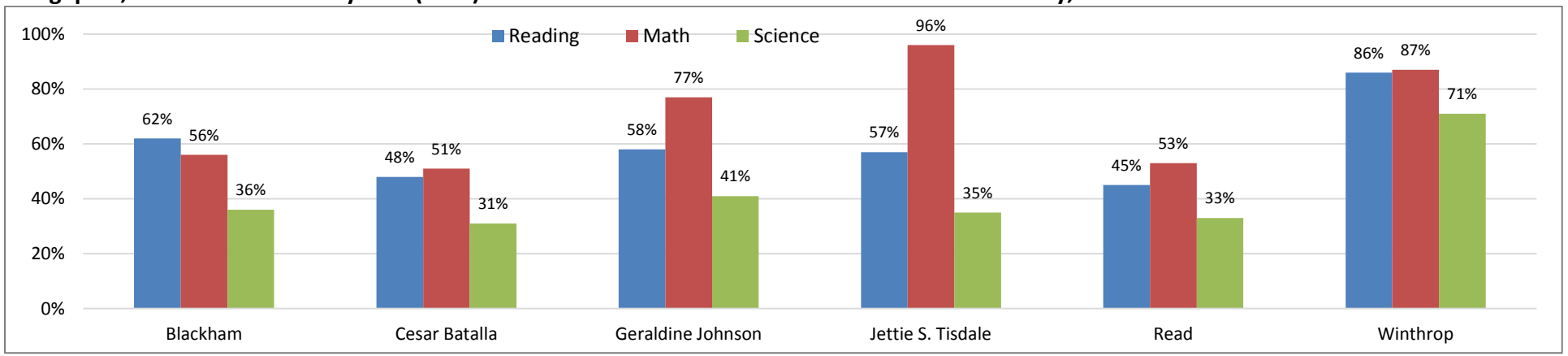
Assessment Data – SECEP Middle Schools

Michigan Educational Assessment Program (MEAP) Grade 8 – Percent of Students Proficient or Above, 2013-14



State level: Michigan - Reading (73%), Math (34%), Science (20%)

Bridgeport, Connecticut Mastery Test (CMT) Grade 8 – Percent of Students At or Above Proficiency, 2012-13



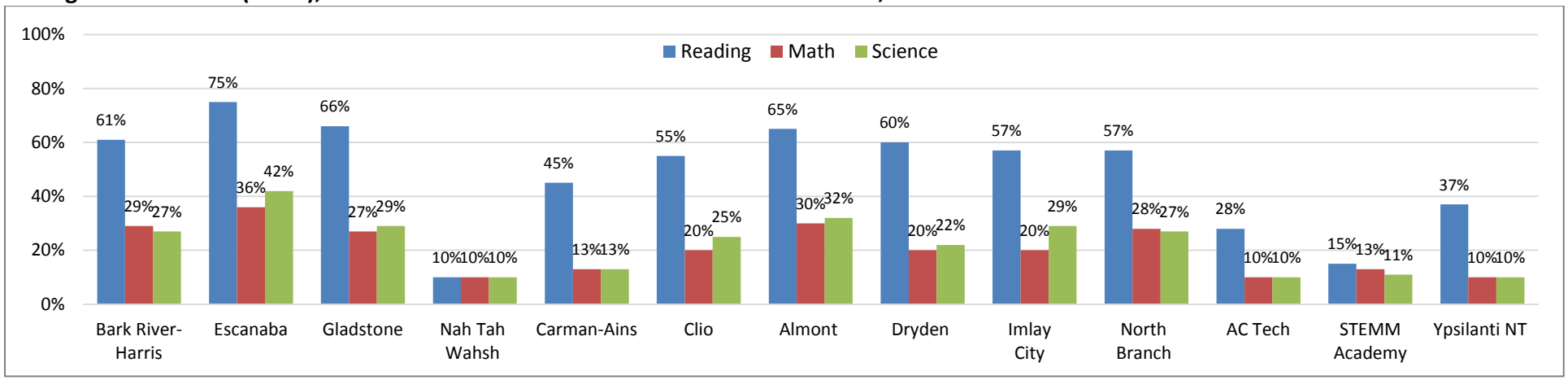
State level: Connecticut - Reading (86%), Math (86%), Science (77%)

Data sources: Connecticut State Department of Education - Connecticut Education Data and Research www.ct.gov, Michigan Center for Educational Performance and Information (CEPI) www.michigan.gov.

Appendix D

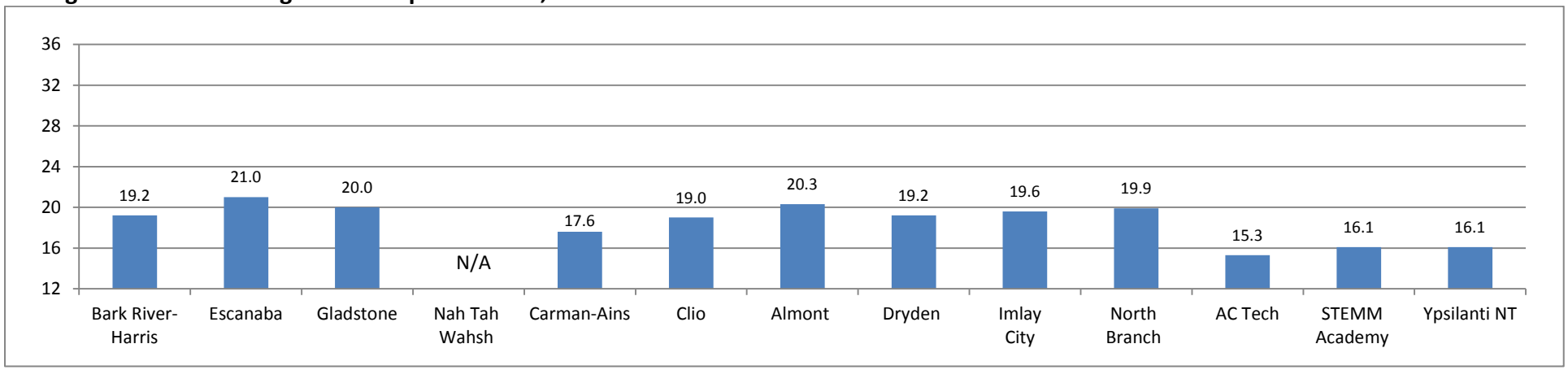
Assessment Data – Michigan SECEP High Schools

Michigan Merit Exam (MME), Grade 11 – Percent of Students Proficient or Above, 2013-14



State level: Michigan - Reading (59%), Math (29%), Science (28%)

Michigan Schools – Average ACT Composite Score, 2013-14



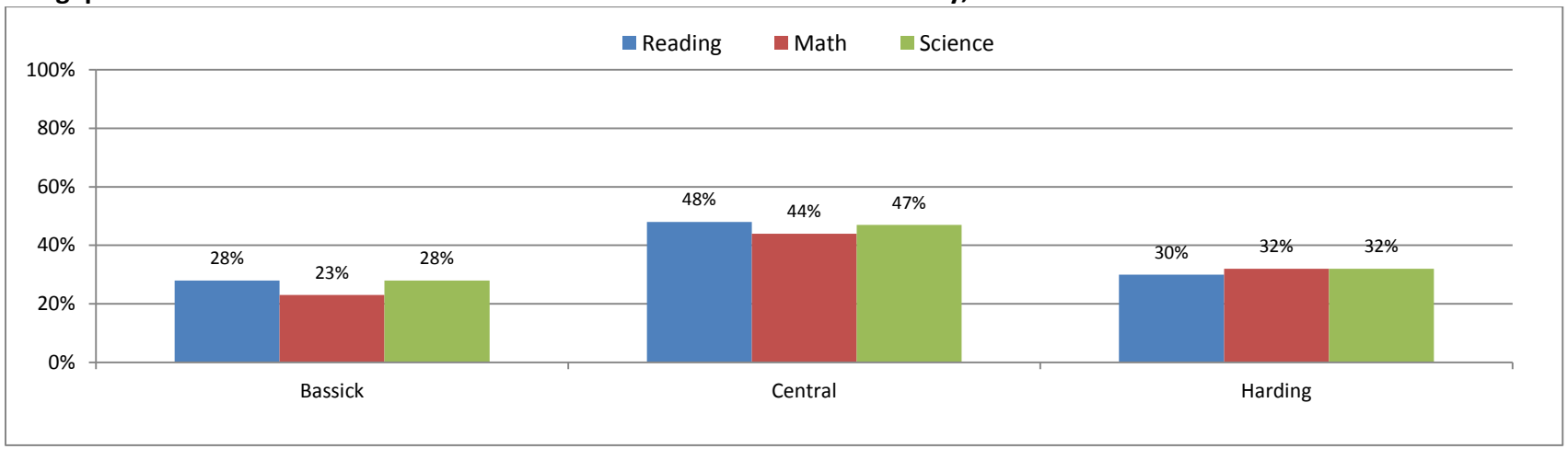
State level: Michigan (19.8)

Data source: Michigan Center for Educational Performance and Information (CEPI) www.michigan.gov.

Appendix E

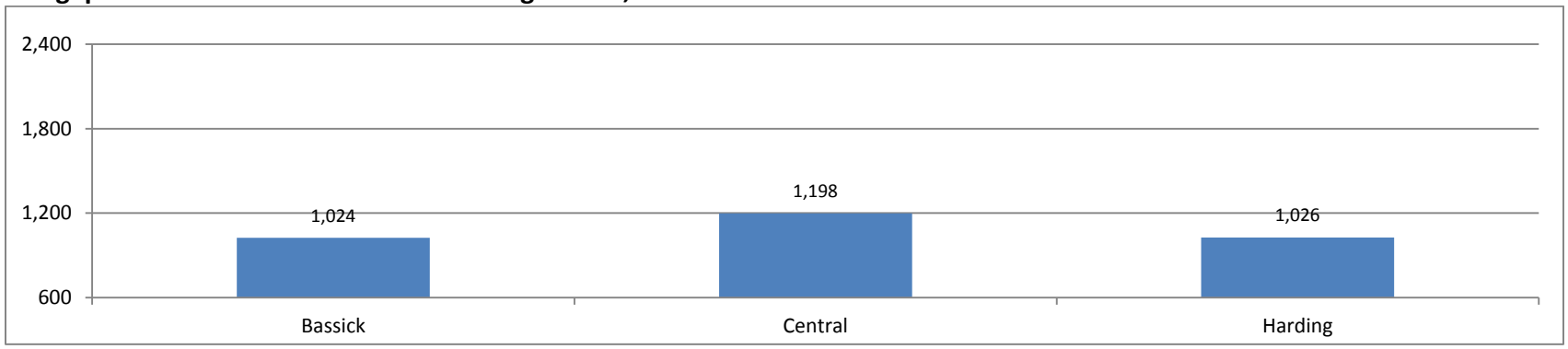
Assessment Data – Bridgeport SECEP High Schools

Bridgeport CAPT Exam Grade 10 – Percent of Students At or Above Proficiency, 2012-13



State level: Connecticut – Reading (49%), Writing (89%), Math (79%), Science (82%)

Bridgeport Schools – SAT Combined Average Score, Class of 2014



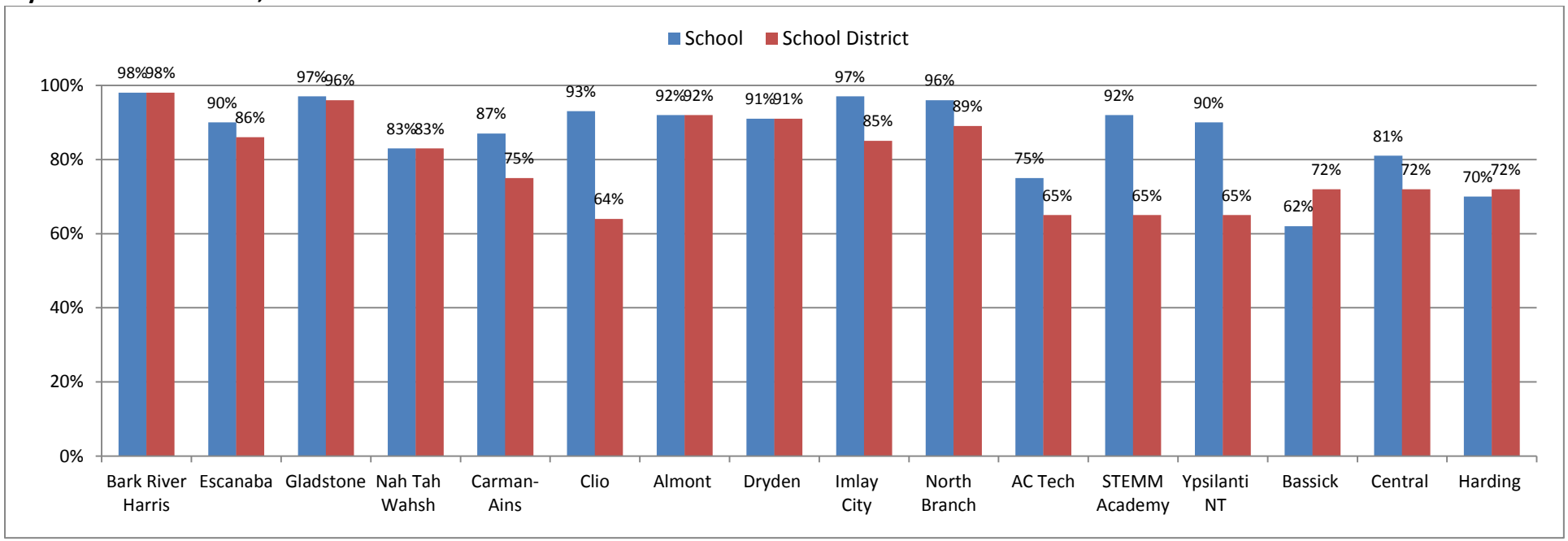
State level: Connecticut (1,525)

Data source: Connecticut State Department of Education - Connecticut Education Data and Research www.ct.gov.

Appendix F

Graduation Rate – SECEP High Schools

4-year Graduation Rate, 2014 Cohort*



State level: Michigan (79%), Connecticut (87%)

* Cohort is defined as group of students who started ninth grade for the first time and are expected to graduate in four years.

"Graduation Rate" Definition:

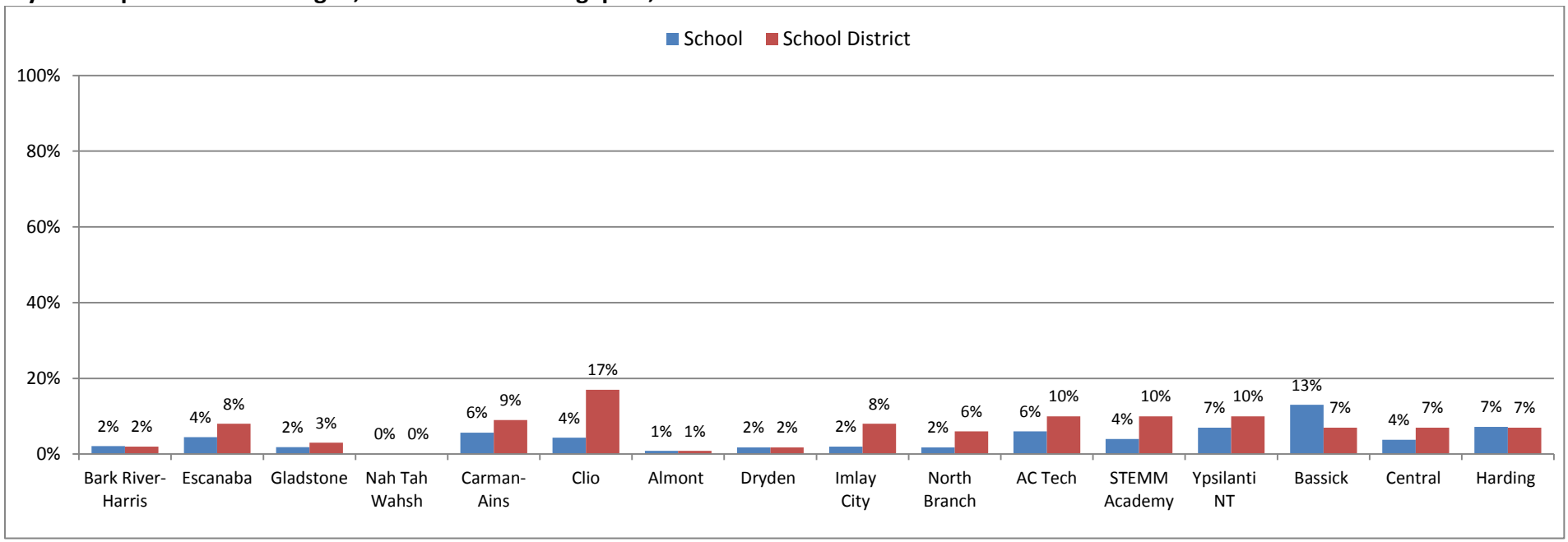
The four-year cohort graduation rate is calculated by tracking an individual cohort, or group of students, from their initial entrance into Grade 9 through to graduation. The four-year cohort graduation rate represents the percentage of students who earn a standard high school diploma within four years. It accounts for students who transfer in and out of the district, who leave school permanently, who leave school during one school year and return in another, or who are retained in a grade but stay in school and graduate later than their original classmates. The number of "on-track graduated" students is used as the numerator and divided by the total count of all cohort status categories (on-track graduated, other completer, off-track continuing, dropout).

Data sources: Connecticut State Department of Education - Connecticut Education Data and Research www.ct.gov, Michigan Center for Educational Performance and Information (CEPI) www.michigan.gov.

Appendix G

Dropout Rate – SECEP High Schools

4-year Dropout Rate – Michigan, 2014 Cohort & Bridgeport, 2012 Cohort*



State level: Michigan (10%), Connecticut (2%)

* Cohort is defined as group of students who started grade 9 for the first time and are expected to graduate in four years.

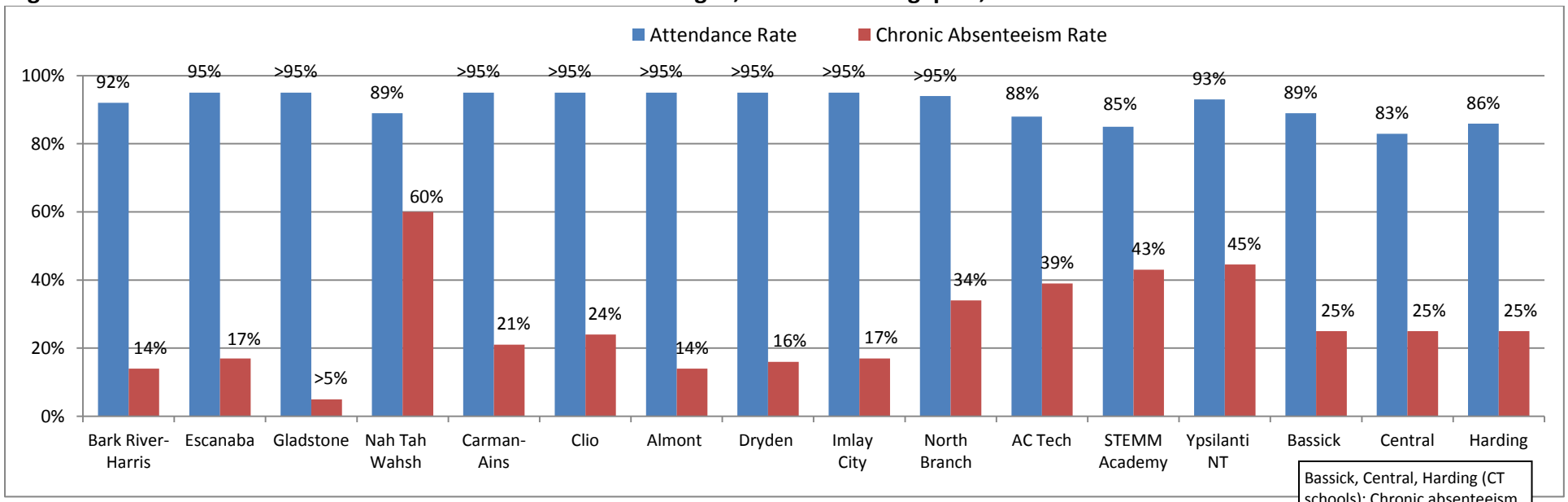
"Dropout Rate" Definition:
There is no national standard for calculating cohort four-year dropout rates. Michigan has chosen to maintain consistency by using the guidelines provided by the National Governors Association and the United States Department of Education to calculate this rate. In Michigan, for example, the 2014 cohort four-year dropout rate is calculated by tracking individual students who first enrolled in ninth grade during the 2010-11 school year (assigned to the 2014 cohort) and left high school permanently at any time during the four-year period prior to completion or whose whereabouts are unknown. The number of "dropouts" is used as the numerator and is divided by the total count of all status categories (on-track graduated, other completer, off-track continuing, dropout). Connecticut also follows the guidelines provided by the United States Department of Education.

Data sources: Connecticut State Department of Education - Connecticut Education Data and Research www.ct.gov, Michigan Center for Educational Performance and Information (CEPI) www.michigan.gov.

Appendix H

Attendance and Chronic Absenteeism – SECEP High Schools

High School Attendance and Chronic Absenteeism Rates – Michigan, 2013-14 & Bridgeport, 2012-13



Bassick, Central, Harding (CT schools): Chronic absenteeism rate (25%) was only available at the school district level.

State level Attendance: Michigan (94%), Connecticut (95%); Chronic Absenteeism: Michigan (25%), Connecticut (17%).

"Attendance Rate" Definitions:

Michigan: The Michigan Center for Educational Performance and Information (CEPI) asks that attendance be reported for all school days where the student attends all or part of the school day. Local school districts report absences differently for their school districts, so you may see discrepancies in attendance rates between schools.

Connecticut: School Overall Attendance Rate/ Average daily Attendance (ADA) = the percentage of a school or district's overall student population that are physically present in school on any given day. This measure is not based on an individual student's attendance rate.

"Chronic Absenteeism" Definitions:

Michigan: The U.S. Department of Education defines students as chronically absent if they have missed more than ten days of school within a given school year. Though the U.S. Department of Education defines truancy as more than ten unexcused absences, these charts do not differentiate between excused and unexcused absences.

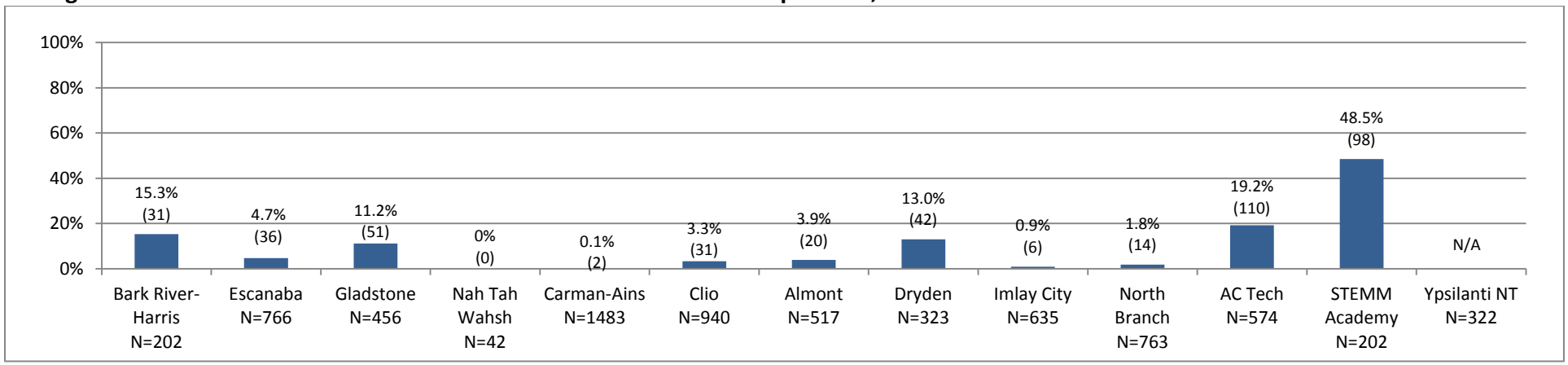
Connecticut: District/School Chronic Absenteeism Rate = A measure of how many students miss at least 10 percent of days enrolled for any reason including excused and unexcused absences and days absent due to out of school suspensions served.

Data sources: Connecticut State Department of Education - Connecticut Education Data and Research www.ct.gov, Michigan Center for Educational Performance and Information (CEPI) www.michigan.gov.

Appendix I

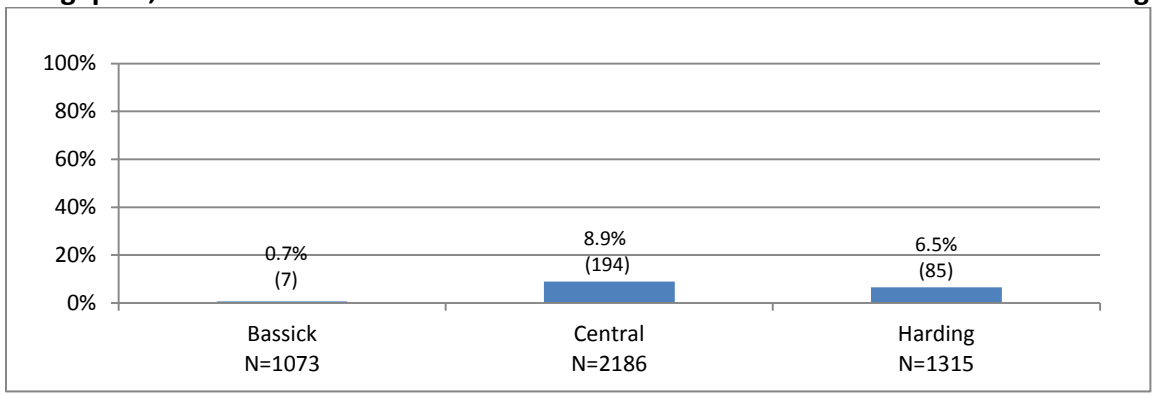
Dual Enrollment Participation – SECEP High Schools

Michigan – Percent of Dual Enrollment Students Out of Entire School Population, 2013-14



Notes: Number in parentheses = Number of dual enrollment students. N = Entire school population, which includes all students enrolled in all grades at each school.
State level average: Michigan – 4.6%

Bridgeport, Connecticut – Percent of Juniors and Seniors Enrolled in Courses for College Credit, 2011-12



Notes: Number in parentheses = Number of dual enrollment students. N = Entire school population, which includes all students enrolled in all grades at each school.
State level average: Connecticut – 36.2%

Data sources: Connecticut State Department of Education - Connecticut Education Data and Research www.ct.gov, Michigan Center for Educational Performance and Information (CEPI) www.michigan.gov.