

Chesapeake Bay Watershed 2022 Environmental Literacy Report

Delaware

Results from the ELIT Survey

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Table of Contents

- 03** Background & Methods
- 11** Results: LEA Preparedness
- 16** Results: Student Participation in MWEEs
- 24** Results: EE Support Needs



BACKGROUND

Study Purpose & Methods

ELIT Background & Purpose

The Chesapeake Bay Watershed Environmental Literacy Indicator Tool (ELIT) was developed to monitor the capacity and progress of public school districts toward meeting the environmental literacy goal stated in the 2014 Chesapeake Bay Watershed Agreement. The goal was to:

Enable every student in the region to graduate with the knowledge and skills to act responsibly to protect and restore their local watershed.

Three outcomes are stated in the agreement:

1. **Students:** Increase age-appropriate understanding of the watershed through meaningful watershed educational experiences (MWEEs) and rigorous, inquiry-based instruction, with a target of at least one MWEE in elementary, middle, and high school, depending on available resources.
2. **Sustainable Schools:** Increase the number of schools that reduce impact of buildings and grounds on their local watershed, environment, and human health through best practices, including student-led protection and restoration projects.
3. **Environmental Literacy Planning:** Develop a comprehensive and systemic approach to environmental literacy for all students, including policies, practices and voluntary metrics that support environmental literacy goals and outcomes.

The ELIT contributes to monitoring public school districts' progress toward these outcomes, collecting data about:

- School district preparedness to implement a comprehensive and systemic approach to environmental literacy education (Outcome 3);
- Student participation in MWEEs during the school year (Outcome 1);
- School district needs to support further improvements in environmental literacy education.

The ELIT tool was modified in 2022 to reduce the reporting burden on school districts. In this revision, questions about sustainable school practices were eliminated, as relevant data can be obtained through other means.

The ELIT is administered biennially to all local education agencies (LEAs) in six jurisdictions in the Chesapeake Bay Watershed. **This report presents results only from all responding LEAs in Delaware, regardless of whether they are in or out of the watershed.**

ELIT Data Collection

Data Collection Procedure

The ELIT is typically administered every two years as an electronic survey. It is intended to be completed by a single representative from the administration of each LEA (school district) who is able to report on district-wide activities. Additional data-points that are more reliably obtained through non-survey means (e.g., in/out of watershed; student enrollment) are identified from external sources and merged with the survey responses.

Past ELIT data were collected in 2015, 2017, and 2019. Collection was paused in 2021, due to the substantial impacts on school districts due to the COVID-19 pandemic. Collection resumed in 2022 to assess where the region stands in the wake of these impacts on education systems.

NOAA's Chesapeake Bay Program organized data collection in 2022, and representatives from each state's education office led distribution of the survey to LEAs within their jurisdiction. ELIT data collection targets only public school districts. This report only includes responses from public school districts that fall within the Chesapeake Bay Watershed.

Data Collection Timing

The 2022 ELIT asked districts to report on the status of activities for the 2021-22 school year. To support this, the ELIT survey opened for responses in May 2022. The survey remained open for responses through the spring and summer. In response to demand from several states and LEAs for more time to complete the survey, the deadline for completion was extended through the end of November 2022.

Additional Information about Data

The most significant challenge of the ELIT is obtaining a strong response rate from more than 300 LEAs across six states. As greater numbers of LEAs report their activities into this dataset, the Chesapeake Bay Program has a more accurate understanding of the status of environmental literacy activities across the watershed.

The 2019 dataset, which is included in this report when comparing results year-to-year, was a combined dataset that included all 2019 districts that responded, as well as appending any 2017 data from districts that had not updated their responses in 2019. The underlying assumption was that changes in status within non-reporting districts was likely minor over the course of two years (as ELIT change tends to be incremental). This provided a more robust picture of the region at that time.

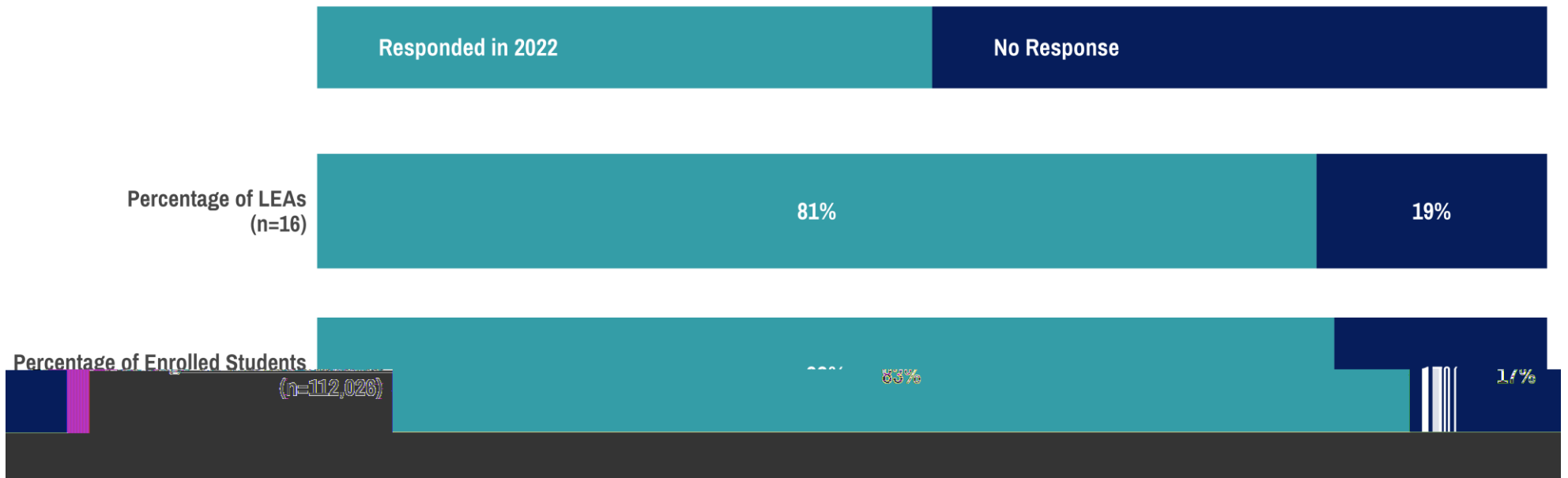
In 2022, because the last ELIT was three years ago, and in those three years there were many, major shifts in all aspects of education systems, we did not append this year's data with any historic data. All data are only what was reported this year.

2022 ELIT Response Rate

13 out of 16 LEAs in Delaware completed the ELIT survey in 2022. This constituted a response rate of 81% of all districts, and 83% of enrolled students in the state.

Delaware's response rate was notably higher in 2022 than it has been in previous years. A high proportion of LEAs and enrolled students in Delaware are represented in the 2022 data set, which indicates the data presented here can be taken as a fairly accurate representation of environmental literacy efforts statewide.

ELIT Response Rate: Percentage of all LEAs and of Enrolled Students across Delaware in 2022



Availability of Paired Year-to-Year Data

The majority of 2022 responses do not have previous paired data from 2019. Overall, just 5 districts provided data in both periods of data collection that can be used for direct comparisons.

In the analyses that follow, we use this paired dataset to explore the degree to which changes may have occurred over past years. By isolating comparisons to districts that responded in both current and previous years, we can look at the number of districts who reported increases or decreases in indicators in the past three years.

Due to the relatively small ratio of paired year-to-year data, trends within the paired dataset may not reflect changes experienced among LEAs across the whole state.

Repeat ELIT Respondents: Availability of Paired Year-to-Year Data

This graph considers the full, historic dataset of ELIT responses in Delaware. Segments of the graph show the proportion of districts that were entirely new to ELIT reporting this year, those that have responded at both periods, and those who responded previously, but did not update their data in 2022



Staff Responsible for Sustainable Schools

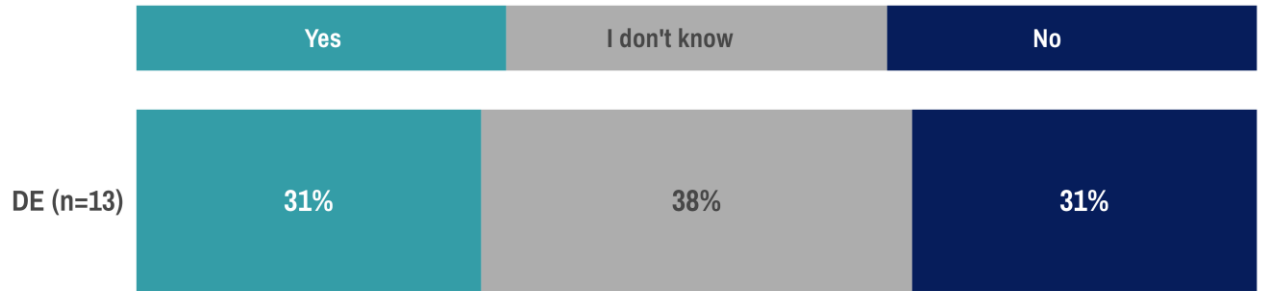
Nearly a third of the responding LEAs indicated that their district has dedicated staff responsible for sustainable schools, while many were unsure.

The 2022 ELIT did not engage in a full inquiry of sustainable schools practices, to reduce the burden on districts where data may be gathered elsewhere. Only one question was asked, which was to gauge if the district had dedicated staff responsible for sustainable school efforts.

Delaware seemed to have mixed success in appointing support staff for coordinating sustainable school efforts, with over a third of districts unsure of staffing and the additional districts split on the presence of such staff.

Sustainable Schools: Presence of Support Staff

Responses to the question: Does your LEA have a staff lead or team responsible for coordinating sustainable schools efforts?



Curricular Requirements: Climate Change Topics

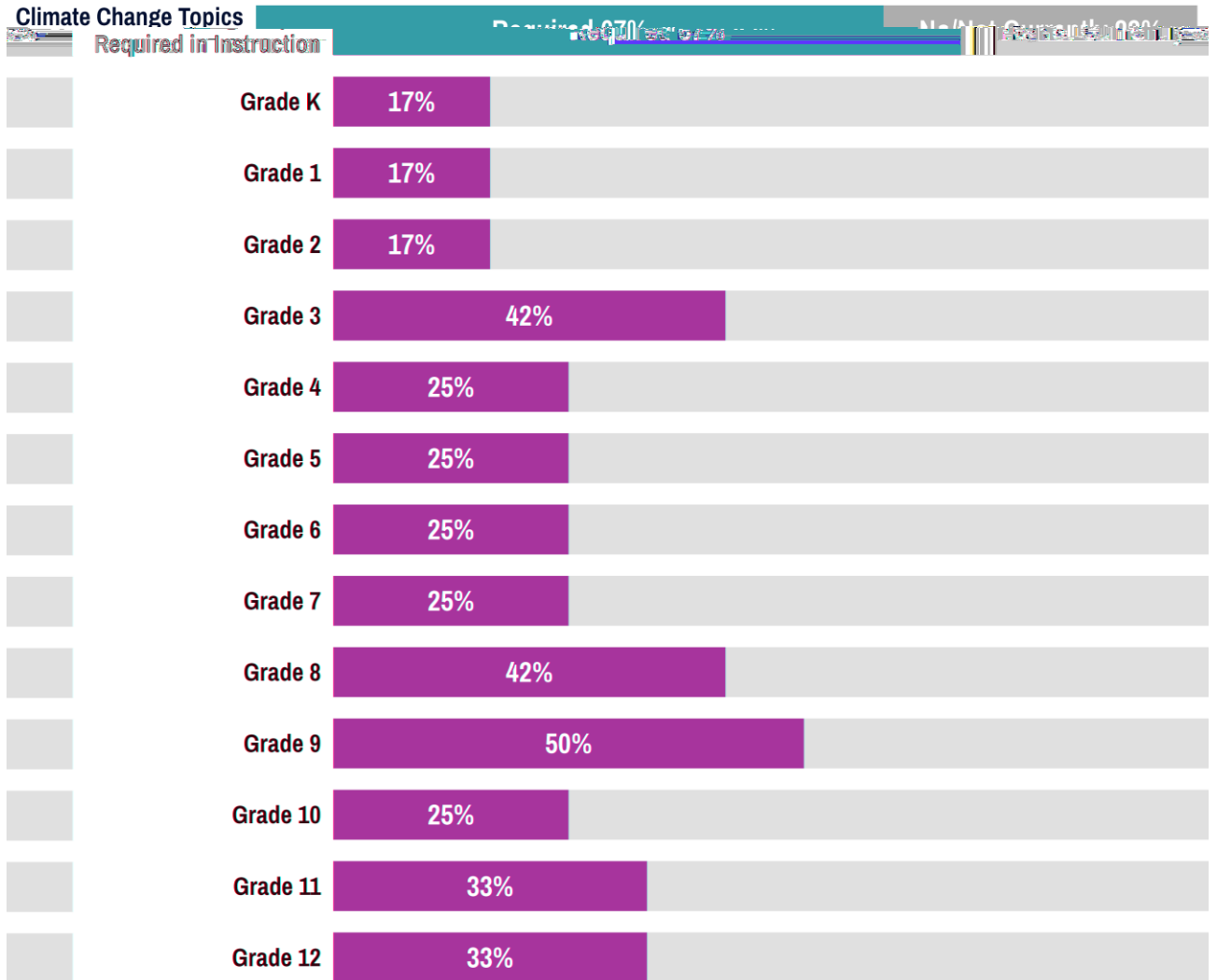
8 out of 12 responding LEAs (67%) reported that teaching climate topics is required in their curriculum in at least one grade.

Among the districts that reported having required instruction about climate change, grades 3, 8, and 9 seemed to be the most common years at which it is required to teach the types of topics that were listed for this category.

Required instruction for climate change content appeared to be slightly less common in grades K-2, as compared to middle and high school grades.

Percentage of LEAs Requiring Instruction in Climate Change Topics by Grade Level

The top bar shows the overall ratio of districts who reported requiring or not requiring these topics at any grade level. Grade level bars show the percentage of all LEAs that indicated these topics are required at that grade level. (n=12)



PD Offerings: Climate-Focused Topics

About two-thirds of responding LEAs reported that there is no teacher professional development (PD) offered on climate-focused topics, of which they were aware.

Only one responding district reported that there was any district-level PD programs offered for teachers that was focused on climate or climate change topics. Two others reported that they were aware of such PD being offered at individual schools, but not as a district-wide effort.

The one district that selected “it’s complicated,” wrote in this explanation in thinking about climate-focused PD: “incorporated within state standards for Geography and science.” The meaning of this statement was not fully clear; but it may have been providing context to the prior question in the survey, which was focused on the curricular areas that require instruction climate-specific topics.

Percentage of LEAs Offering Climate-Focused PD for Teachers (n=12)

Graph shows how LEAs characterized how their district offers PD specifically about instruction on climate change topics, to distinguish PD offered at a district-wide level, idiosyncratically at schools, or none at all.



RESULTS



**Preparedness to Implement
Environmental Education**

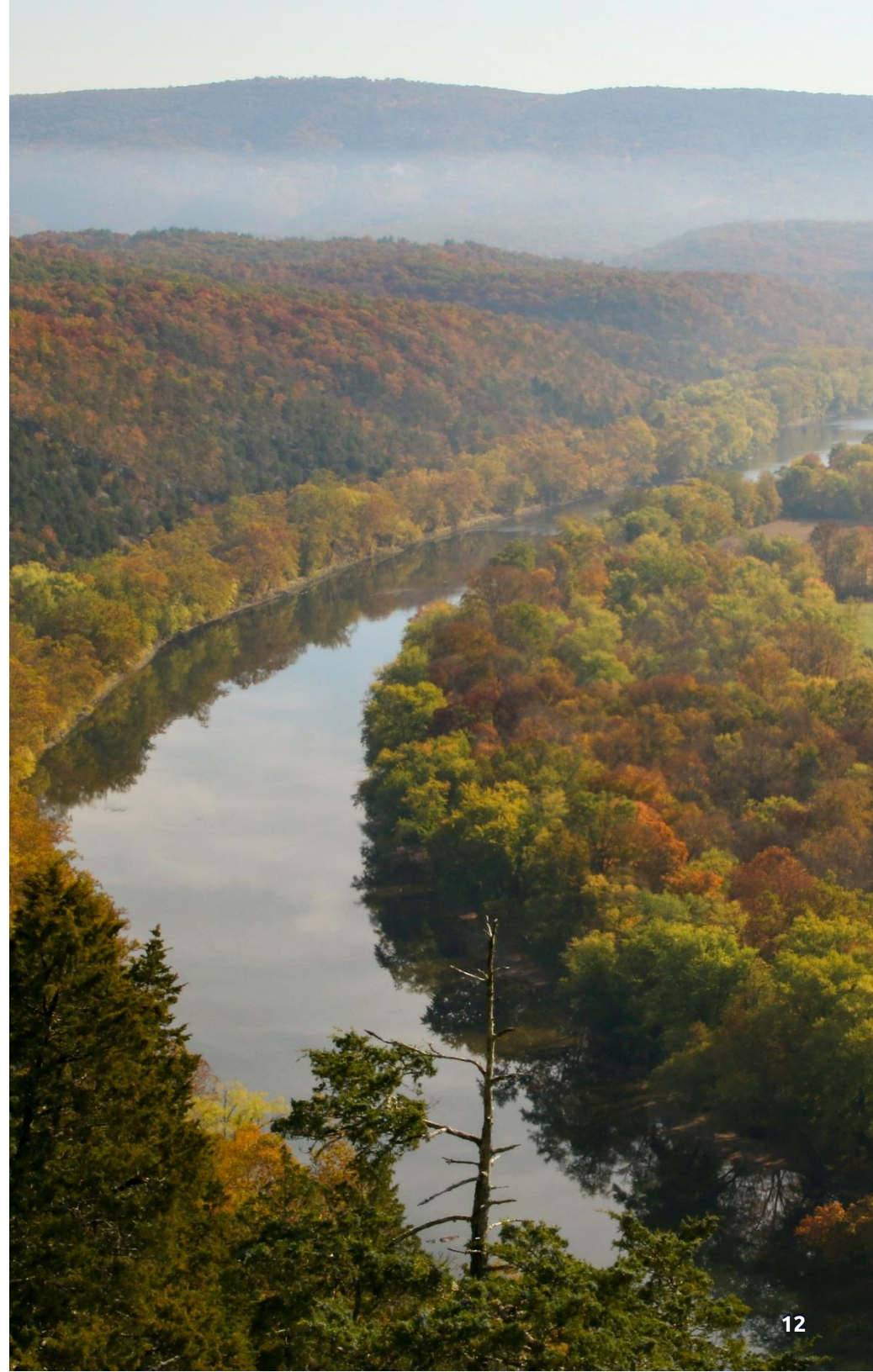
Measurement Overview

To assess each LEA's current capacity to implement a comprehensive and systemic approach to environmental education (EE), respondents considered six elements (below) and indicated for each whether it was:

- Not in place
 - Partially in place
 - Fully in place
- The response for each element was scored with a value of 0, 1, or 2, respectively. These values were summed to arrive at a total preparedness score for the district.

Six Elements Used to Determine LEA Preparedness for EE:

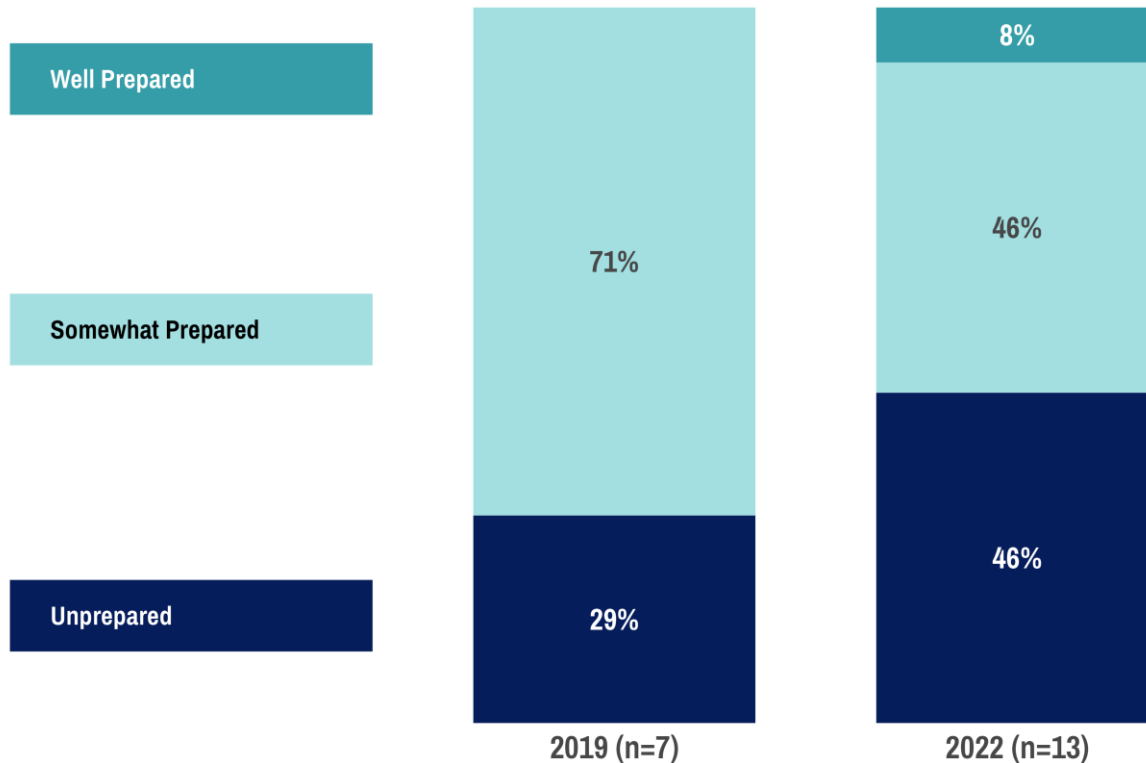
- a) An established program leader for environmental education (providing effective, sustained, and system leadership).
- b) An integrated program infusing environmental concepts into appropriate curricular areas.
- c) Regular communication among staff responsible for environmental education curriculum and program implementation.
- d) A support system in place that enables teachers and administrators to engage in high quality professional development in content knowledge, instructional materials, and methodology related to environmental education.
- e) A plan to ensure opportunities for all students to engage in meaningful watershed educational experiences (MWEEs) at the elementary, middle and high school levels.
- f) Established community partnerships for delivery of environmental education, including implementation of MWEEs.



LEA Preparedness: Trends Over Time

Changes in Environmental Literacy Preparedness Over Time (2017-2022)

Preparedness levels in all reporting LEAs in Delaware



Comparing Paired 2019 and 2022 Data

Changes in preparedness within individual LEAs for which we have paired data within Delaware (n=5).



Just over half of LEAs in Delaware are somewhat or well-prepared to implement high quality environmental education.

Responding LEAs rated how fully their district has implemented the six indicators of planning and infrastructure for high quality EE. Total preparedness scores, across all indicators, were grouped into three levels of preparedness:

Well Prepared: scores from 9-12

Somewhat Prepared: scores from 4-8

Not Prepared: scores from 0-3

Looking at the aggregate numbers, the rates of unprepared LEAs went up fairly dramatically. However, due to the varying samples from year-to-year, this may not be an accurate depiction of change experienced by LEAs statewide.

Exploring the subset of LEAs for which we have year-to-year data, 2 out of 5 districts went down a level, 2 stayed the same, and 1 went up a level. While this generally mirrors what we see in the larger year-to-year data, the small sample of paired data may or may not accurately reflect LEAs across the state.

Breaking Down the Elements of Readiness

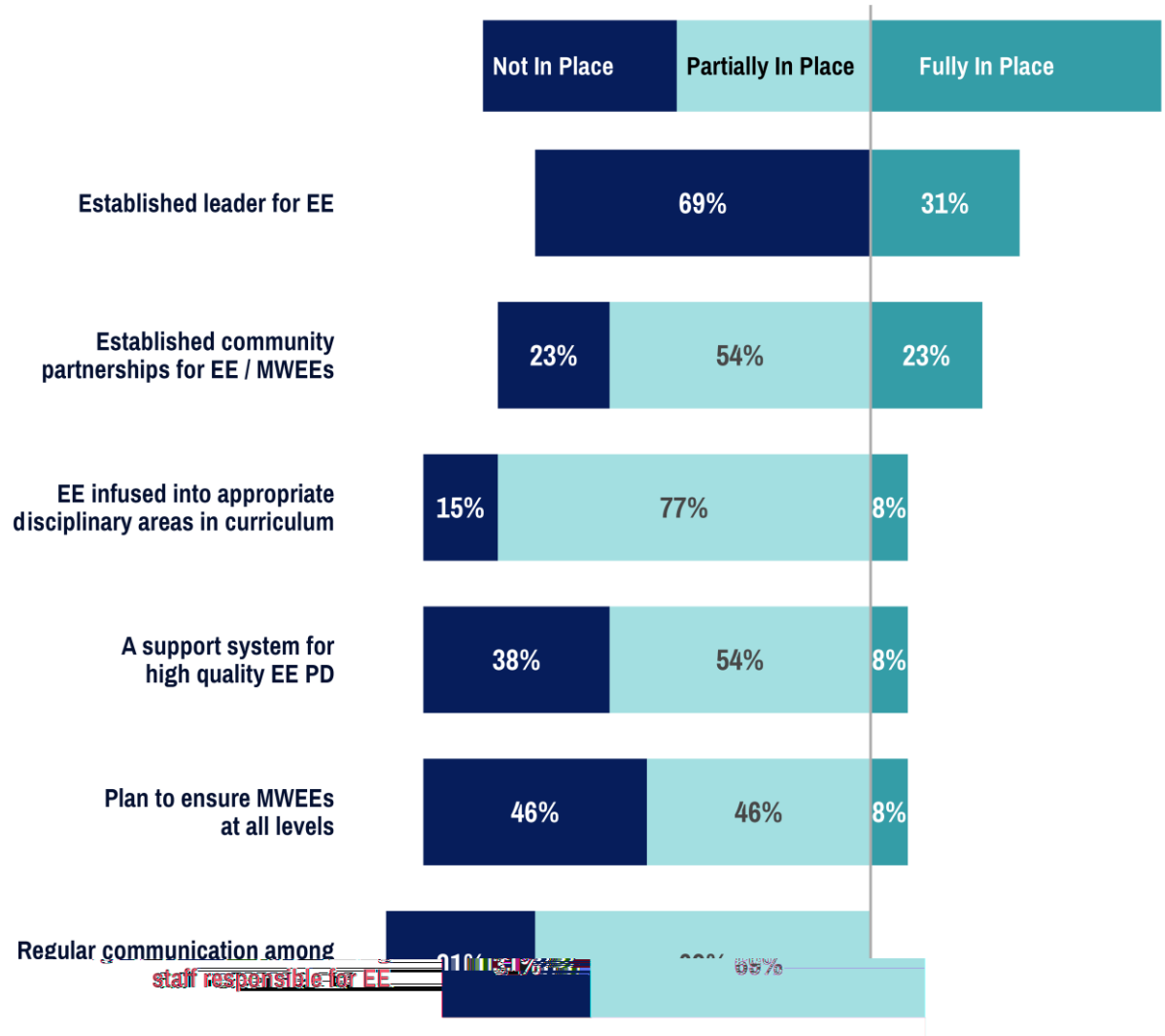
Nearly a third of LEAs in Delaware reported having an established leader for environmental education.

Community partnerships seemed to be an area of promise in 2022, with 23% of districts reporting that partnerships were fully in place. Creating an integrated program that infuses environmental topics across the curriculum is the area in which the greatest number of LEAs have made some progress (77%) but only 8% have fully achieved this element.

The next page further breaks down these data, by comparing the three sub-groups (well-prepared, somewhat prepared, or unprepared). It suggests that establishing an EE leader, building community partnerships, and integrating EE across the curriculum are areas in which less-prepared districts make early strides toward greater preparedness.

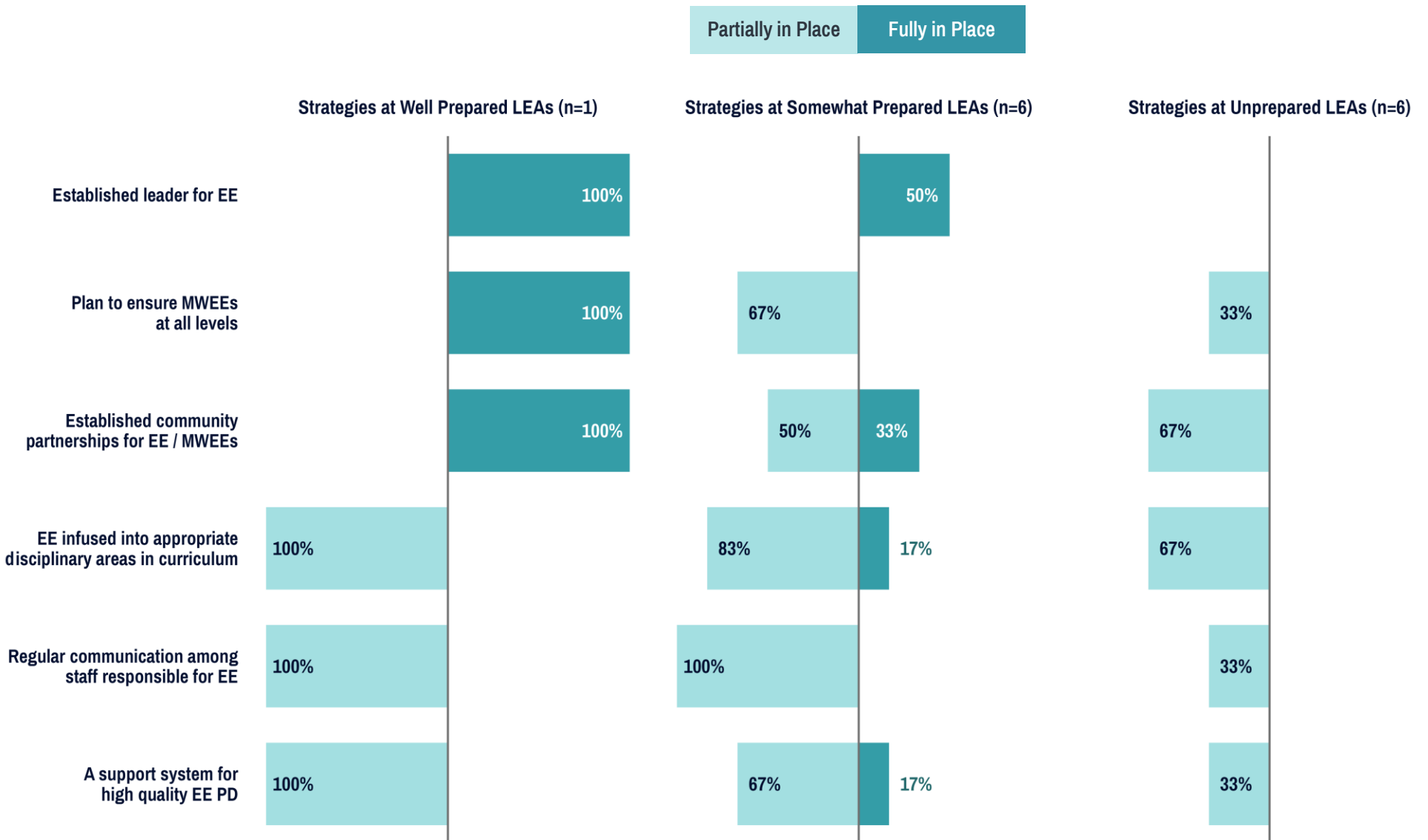
Degree of Readiness for Each Element of LEA Planning and Infrastructure.

Distribution of ratings to individual items in the planning indicator by all LEAs in Delaware (n=13)



Elements Fully or Partially in Place

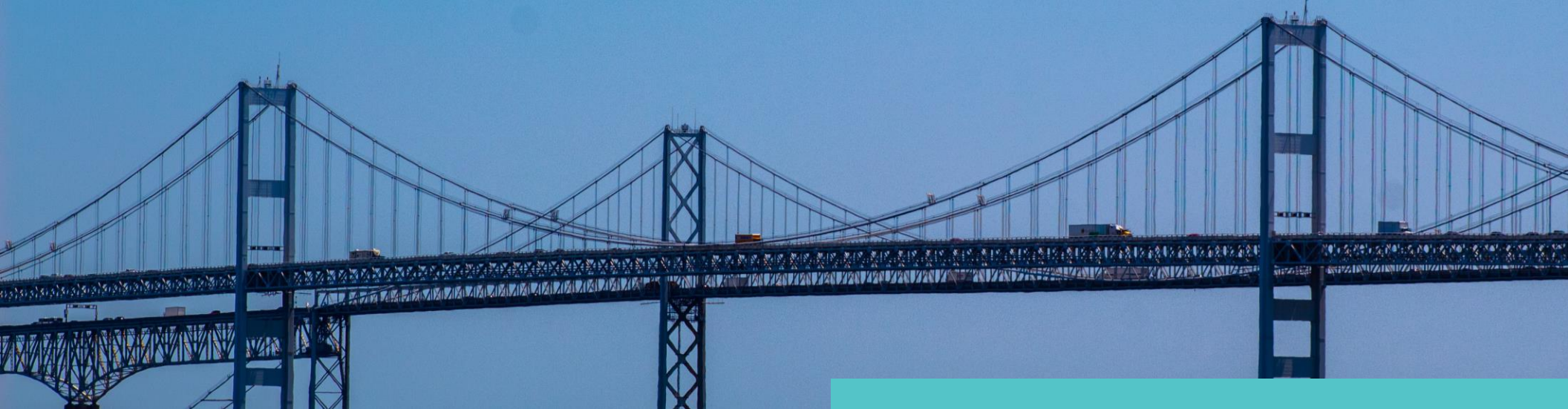
Comparing Strategies between Levels of Preparedness



RESULTS

Student Participation in Meaningful Watershed Educational Experiences (MWEEs)





RESULTS: STUDENT PARTICIPATION IN MWEEs

Measurement

To assess the level of student participation in MWEEs within each LEA, respondents were asked to assess the presence of MWEEs within curricular offerings within each grade level (K-12), considering if they were system-wide or isolated to schools or classes. (See detail, right.) Respondents were given a reminder of the complete definition of a MWEE before the questions.

Although respondents reported at individual grade levels, analysis aggregated these data to report results by grade band (elementary, middle, or high school). The aggregation grouped each LEA into one of three levels within each grade band:

- At least one system-wide MWEE provided in the grade band;
- Some MWEE programming in the grade band, but not system-wide;
- No MWEE programming provided in the grade band.

For elementary (K-5) and middle school (6-8) grades, respondents indicated whether the district had:

- A system-wide MWEE experience for students in this grade
- Some schools or classes in this grade participate in MWEEs
- No evidence that students in this grade participate in a MWEE

For high school, MWEEs are more likely to correspond to a course than a grade level. Therefore, respondents reflected on courses at the high school level, indicated if the course was required or elective and whether the district had:

- A system-wide MWEE experience for students in this course
- Some schools or classes participate in MWEEs for this course
- No evidence that students in this course participate in a MWEE

The MWEE level was computed based only on courses that were indicated to be graduation requirements (i.e., needed for all students).



Student Participation in MWEEs

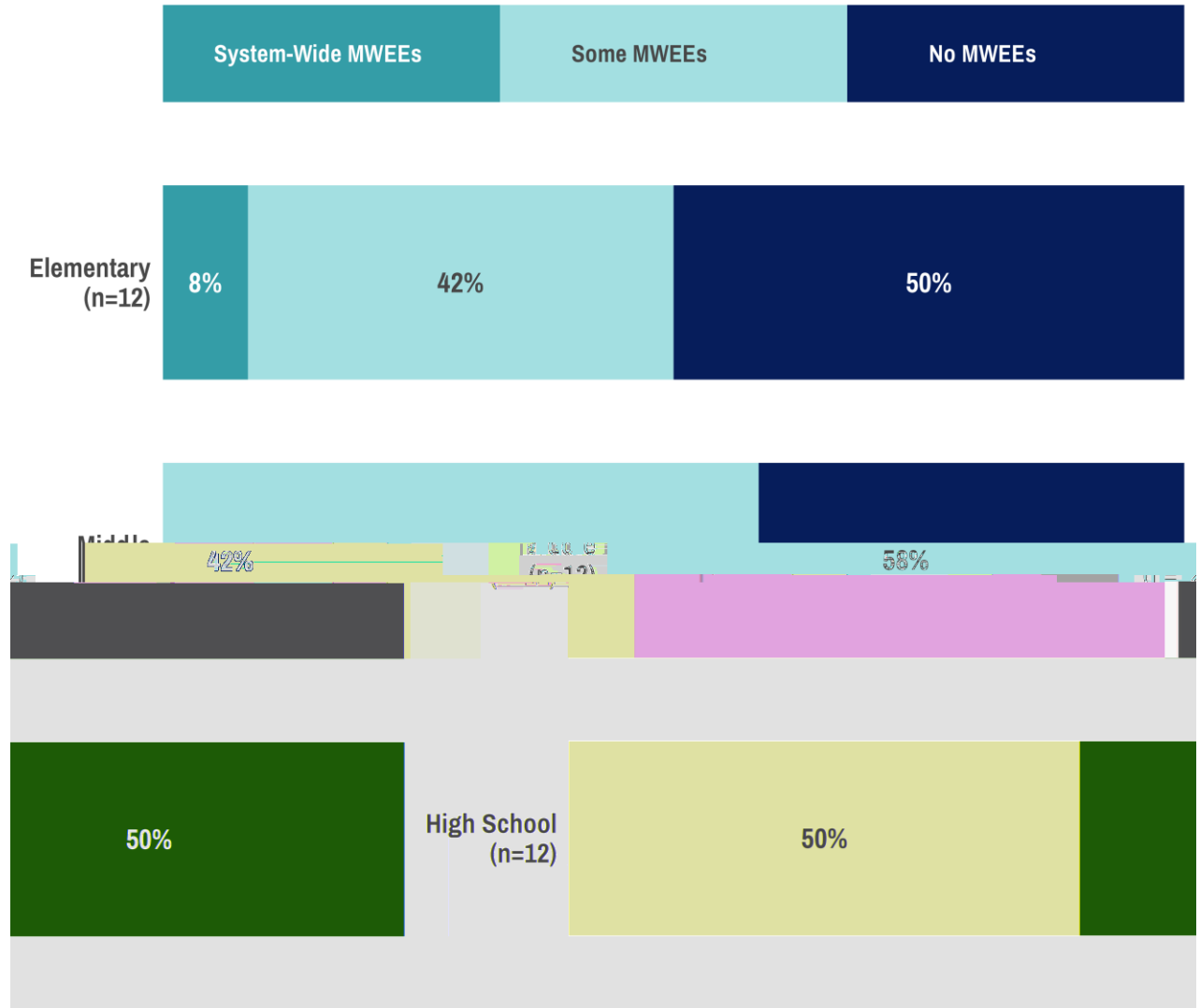
Only one district in Delaware reported having a system-wide MWEE, which was at the elementary level. Approximately half of LEAs reported providing some MWEEs across each grade band.

While no districts reported a system-wide MWEE in middle school, this was the grade band with the highest rates of MWEE availability, with 58% reporting some availability in the middle grades.

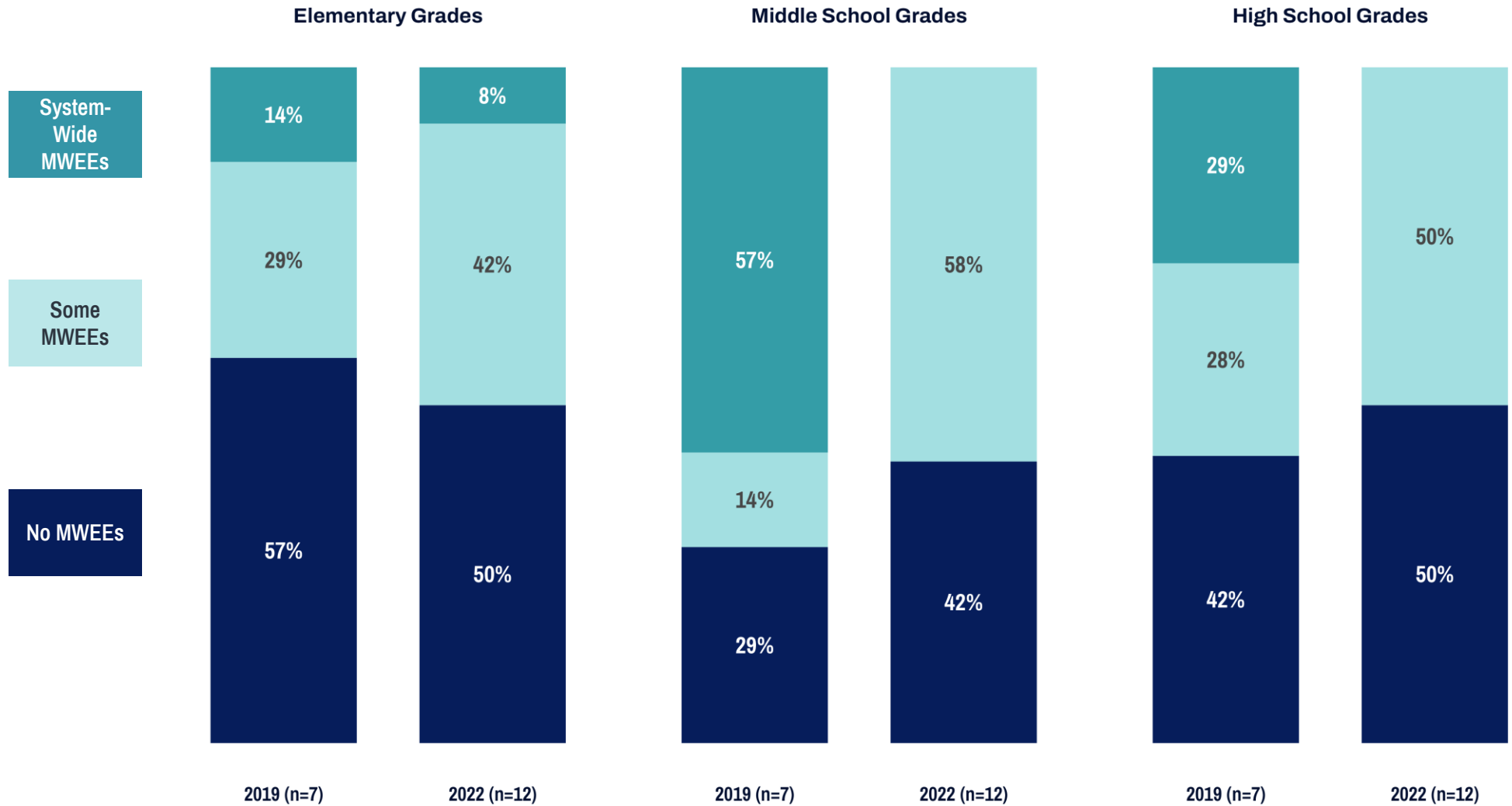
On the next page, 2019 and 2022 results are compared. Overall, rates of system-wide MWEEs decreased, especially in middle school. High school rates decreased as well, although not as dramatically. Elementary MWEE availability seemed to stay more consistent.

MWEE Availability among LEAs within Delaware in 2022

Rates of availability across all responding LEAs. If a district reported there was a system-wide MWEE at any grade level(s), they were scored as having “System-Wide MWEEs”; “No MWEEs” indicates no MWEEs at any grade in the band.



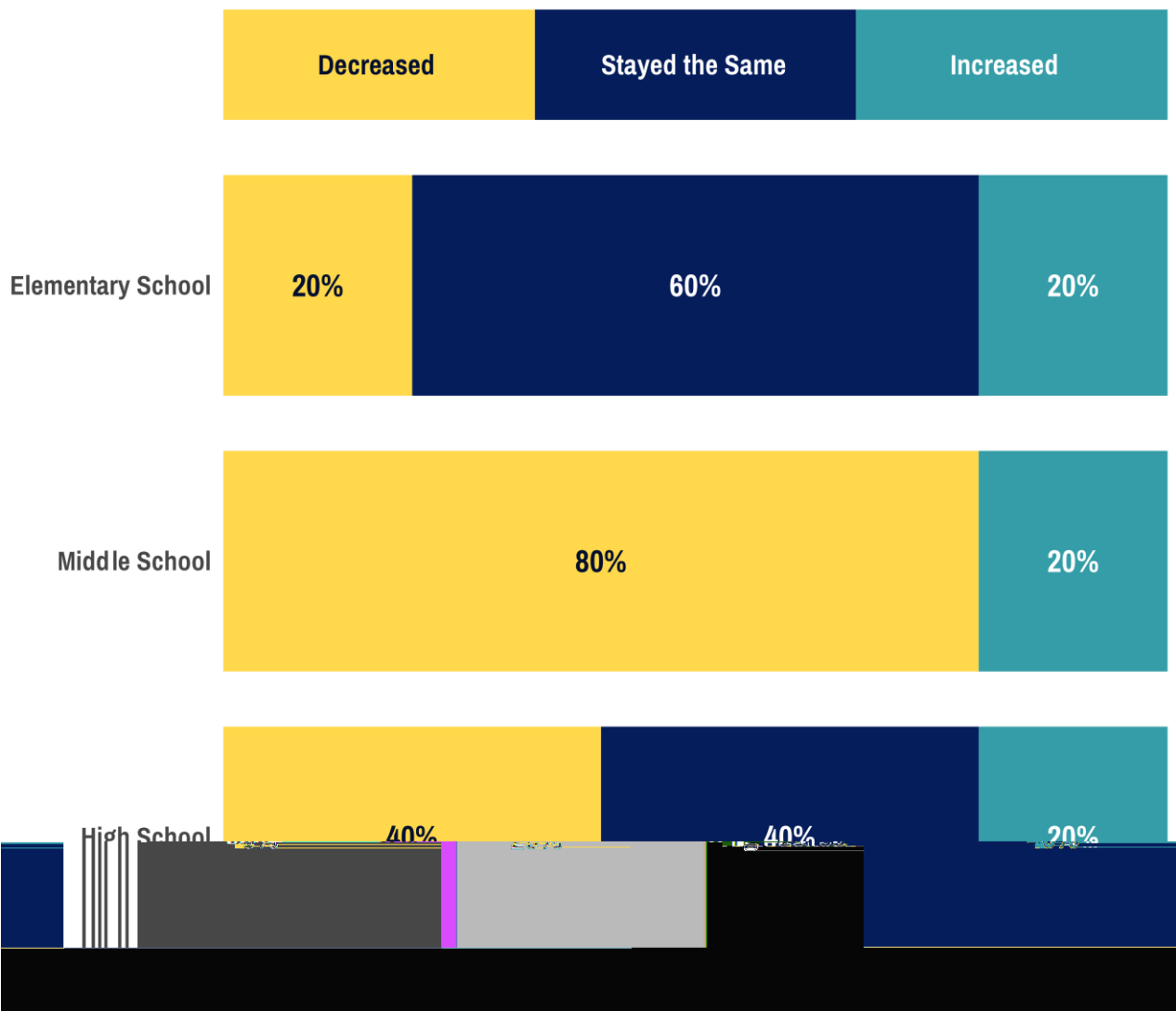
MWEES by Grade Band: Change Over Time



Comparing Change in Paired 2019 and 2022 Data

Comparing Changes in Preparedness within Paired 2019 and 2022 Data

Whether preparedness levels (prior page) increased, decreased, or stayed at the same levels, within individual LEAs in Delaware for which year-to-year data were available. (n=5)



MWEE availability seemed to change dramatically within the 5 districts with paired 2019 and 2022 data.

LEAs in Delaware seemed to see a fair rate of increase and decrease across reporting LEAs, especially in the middle school grade band.

As has been stated before, due to the small size of the paired data set, these changes may not be wholly reflective of patterns in other districts across the state.

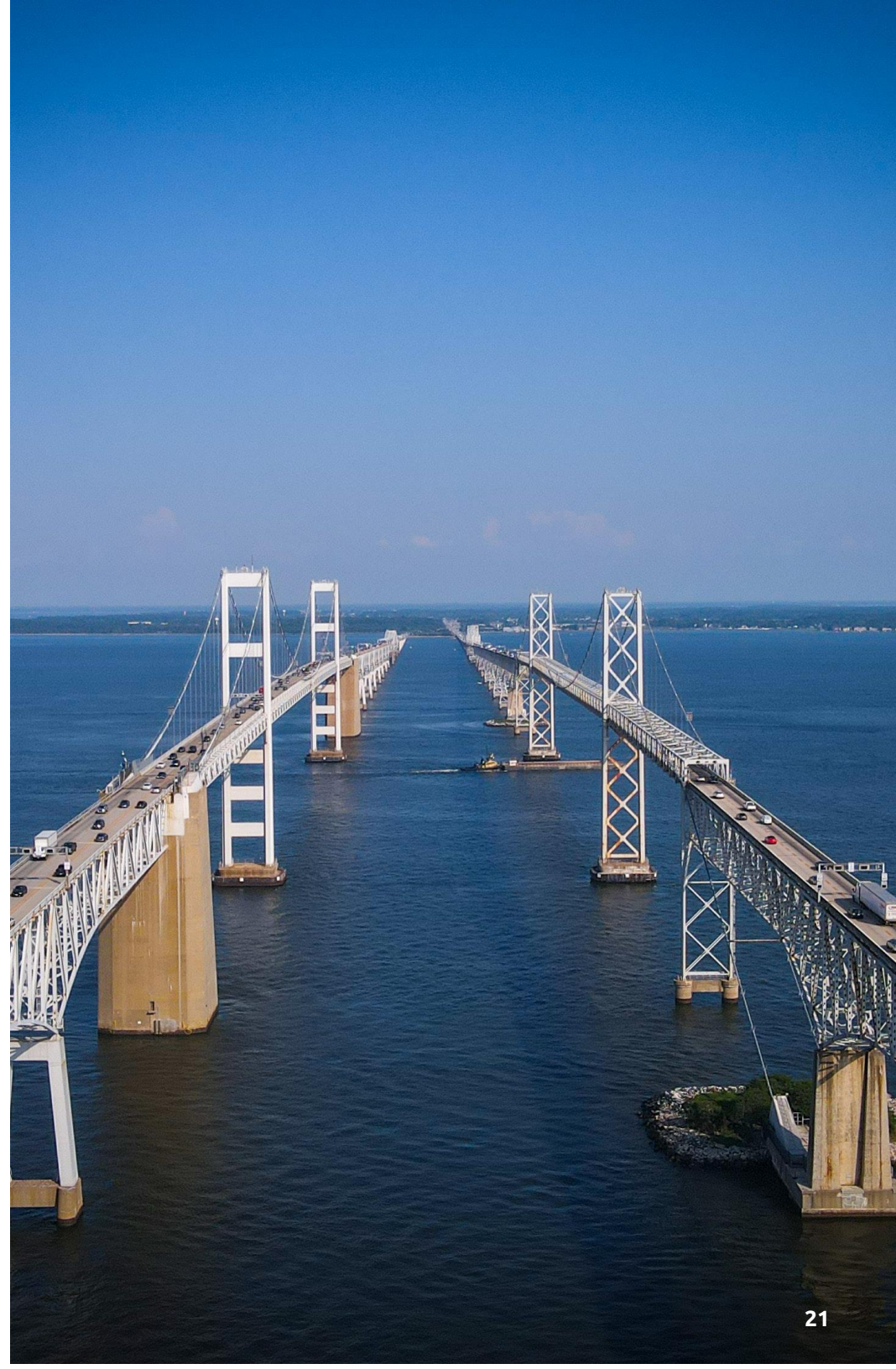
HS MWEE Measurement

A change was made to how data about high school MWEES was collected in 2022, in an effort to make it easier on LEAs and improve accuracy of what was reported.

In past years' ELIT survey, data suggested there may be inaccuracies in how courses were reported, particularly regarding clarifying whether MWEE reporting was clearly limited to *required* courses (a critical part of being considered system-wide). For example, an AP course might be listed as a system-wide MWEE, which indicates the task of focusing on requirements and electives separately was difficult for LEAs to do.

In 2022, the question was streamlined, providing LEAs with an inventory of more specific subjects, including: biology, chemistry, physics, Earth/environmental science, history, government/civics, geography, algebra I, algebra II, geometry, language arts, literature, health/physical education, AP science, AP English, AP math, AP history, with space for write-in courses. LEA representatives reported the presence of MWEES in each of these courses (system-wide, some schools, no evidence) – *regardless* of if it was required or elective. This allowed LEAs to focus on course topics.

A secondary question provided the same list of core subjects (without AP items) and asked them to indicate which courses were graduation requirements. Analysis used this response to distinguish if each MWEE rating (above) pertained to a requirement (for the indicator) or an elective.



High School: Required Courses Using MWEEs

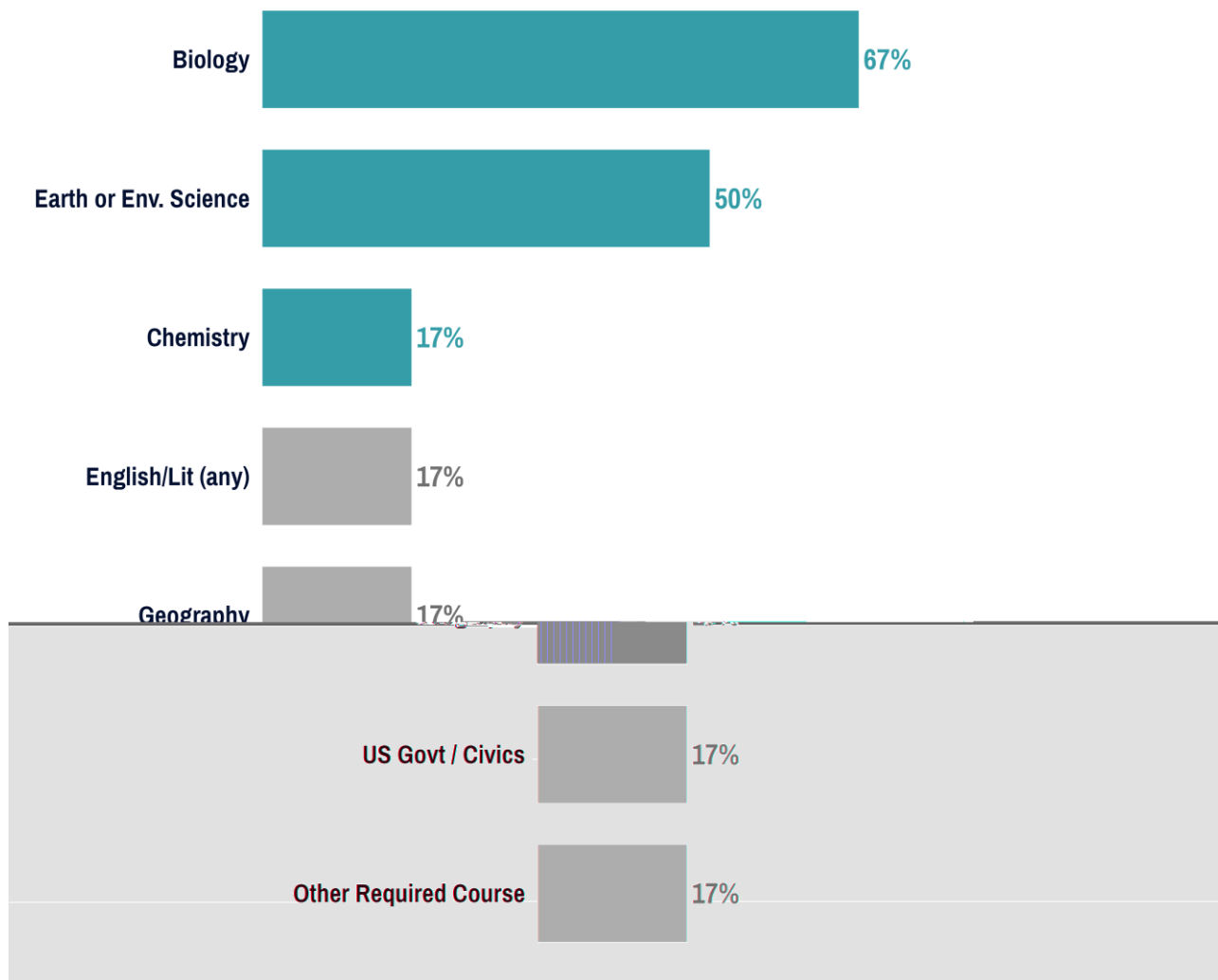
Of the 6 LEAs that reported having at least some MWEE experiences within required high school course(s), most tended to be within science courses.

Biology was by far the most common required subject that incorporated MWEEs. Environmental science was another common required course for MWEEs at the high school level. Chemistry was a less common required course to include a MWEE.

Among required non-science courses, US government and civics, geography, and literature were the most common subjects for a MWEE to be present.

Percentage of LEAs that Provide MWEEs within Each Required Subject (n=6)

Sample is just of LEAs that reported having MWEE(s) in at least one required high school course. Data rely on accurate self-reports that courses are requirements. Teal-colored bars indicate science-focused courses (the most common broad subject area); gray bars indicate non-science courses



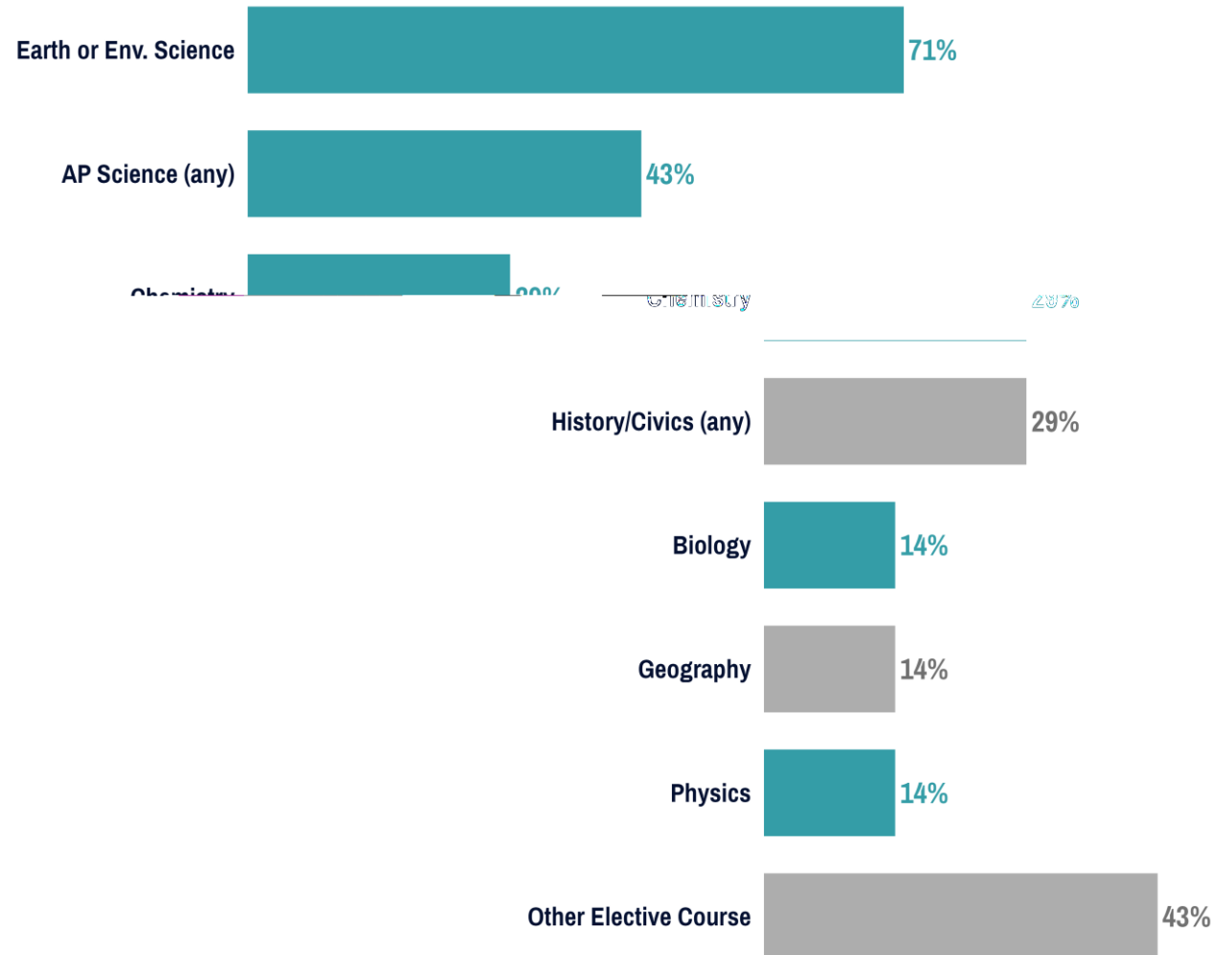
High School: Elective Courses Using MWEEs

7 Delaware LEAs reported offering MWEEs within high school elective courses; most of these were in environmental science, AP science, or chemistry courses.

The top 4 most common elective subjects that included a MWEE were all science courses. Other non-science elective courses included US government, geography, and history.

Percentage of LEAs that Provide MWEEs within Each Elective Subject (n=7)

Sample is just of LEAs that reported having MWEE(s) in at least one elective high school course. Data relies on accurate self-reports that courses are requirements. Teal-colored bars indicate science-focused courses (the most common broad subject area); gray bars indicate non-science courses.



RESULTS

Environmental Education Support Needs



Greatest Needs for EE Support

In Delaware, professional development in all of the available topics were rated as the highest needs above all other categories.

Support from the central office / administration was rated the lowest need, although not dramatically lower than other areas. There also seemed to be slightly lower need for transportation funding and instructional technology.

Three respondents wrote in “other needs” in response to this question:

“Funding for maintenance of outdoor learning spaces as well as assistant staff for programming and maintenance” (rated 7)

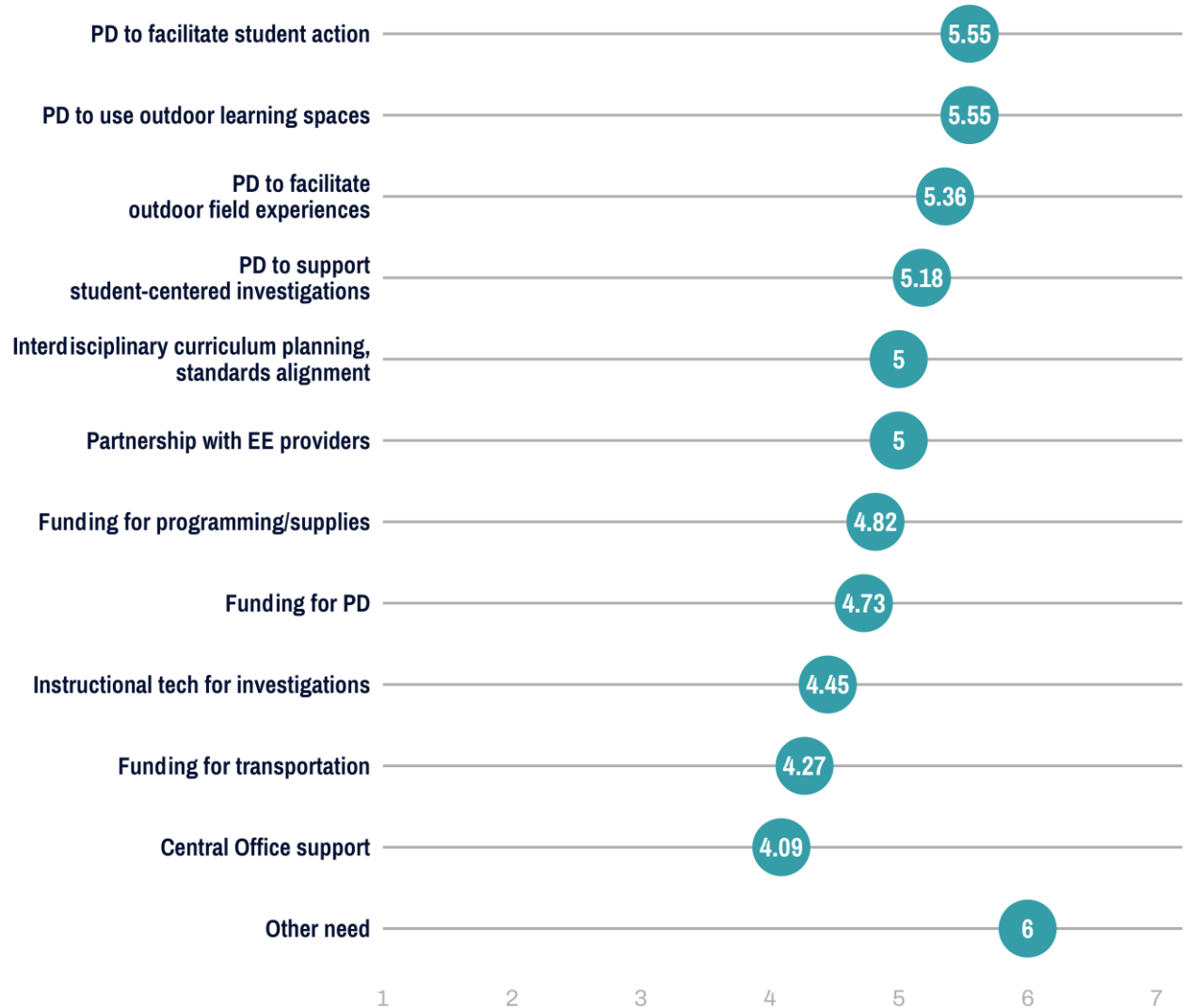
“coordination into existing programs” (rated 5)

“we currently do not have a program. We would need a teacher and all of the materials to get program up and running.” (no rating)

Note: the items asked were revised for the 2022 ELIT survey; as a result, there is no year-to-year comparison possible.

Average Ratings of Need for Support in Each Area Statewide (n=11)

Responding LEAs rated their level of need for support in each area from 1 to 7, with 7 being the greatest need.





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