A Toolkit for Assessing Learning Changes After Spring 2020 COVID-19 School Closures

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Toolkit organization

Introduction: Who should use this toolkit and for what purposes.

Modules

- Module 1. Refining research questions, assessing capacity, and planning for analyses.

- Module 2. Cataloging and assessing data.

- Module 3. Conducting analyses and interpreting findings.

- Module 4. New and complementary data collection activities.

- Module 5. Developing additional research questions, dissemination planning, and identifying resources.

Toolkit organization

Appendices

- Appendix A. District Decision Tree

- Appendix B. Planning for Analysis Workbook, Worksheets 1A–1D (Modules 1–3)

- Appendix C. Planning for Action Workbook, Worksheets 2A–2D (Modules 4 and 5)

- Appendix D. Institute of Education Sciences Resources

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Introduction: Background

The Regional Educational Laboratory Midwest (REL Midwest) created this toolkit in partnership with the Ohio Department of Education (ODE).

In summer 2020, ODE reached out to REL Midwest for assistance in developing a resource to help Ohio public school districts better understand how their students are faring after widespread school closures resulting from the COVID-19 pandemic.

This toolkit is a step-by-step guide for districts that want to

- learn where learning changes may have occurred.

- understand how to use that knowledge to inform decisionmaking.

- identify next steps for future analysis and planning.

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Introduction: Key terms used in this toolkit

- **Pre-COVID-19** refers to the period before Ohio public school buildings closed in spring 2020 in response to the COVID-19 pandemic.

- **Post-COVID-19** refers to the period after Ohio public school buildings closed in spring 2020 in response to the COVID-19 pandemic.

- **Learning changes** refer to the difference between expected and actual scores on standardized assessments, where actual scores are meaningfully different.

- **Remote learning** refers to instruction taking place outside the traditional school setting, when both the learner and the educator are separated by time and/or distance. It can include either digital or analog approaches.

Introduction: Who should use this toolkit?

- This toolkit is designed with **district-level researchers or research teams** in mind.

- The modular design of the toolkit provides the information necessary for all districts to engage in some form of data collection and analysis.

- The toolkit does not specify a singular methodology to estimate learning changes. Users can select an analytic approach appropriate for their data and level of statistical expertise.

- The toolkit also provides guidance in conducting qualitative research to investigate learning changes.

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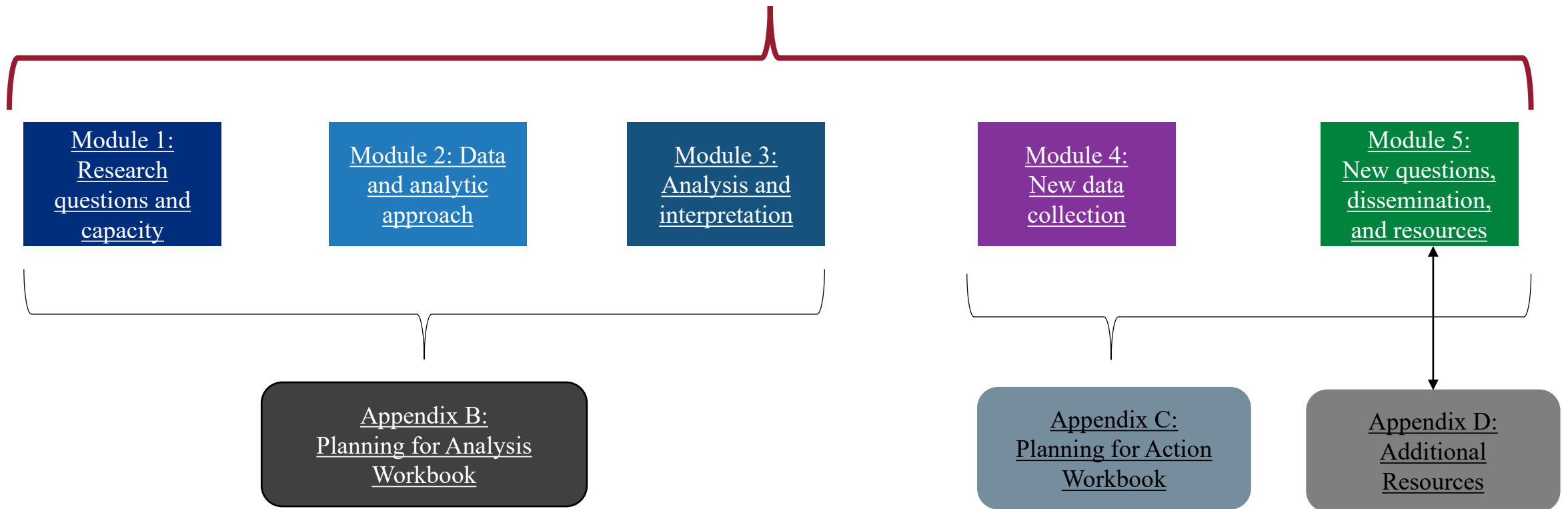# Introduction: How do I use the toolkit modules?

- The toolkit contains **five modules,** each designed to walk districts through a set of steps needed for analysis, data collection, and planning for next steps. **Use the District Decision Tree (Appendix A) as you progress through each module to determine your next steps.** *Slides throughout this toolkit indicate when to check the decision tree.*

- **Modules 1–3** are designed for use by districts with the appropriate research questions, data, and capacity to conduct a quantitative analysis of COVID-19 learning changes. Each module walks districts through crucial decision points prior to conducting a quantitative analysis.

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Introduction: How do I use the toolkit modules?

- **Module 4** outlines considerations for new data collection activities (surveys, interviews, and focus groups). It can be used as an independent module or as a complement for districts that have completed Modules 1–3.

- **Module 5** is intended to be used by all districts as a last step in their investigation into post-COVID-19 learning changes. Module 5 includes developing additional research questions for future investigation, developing a dissemination plan, and planning for seeking out new resources.

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Introduction: How do I use the toolkit appendices?

Appendix A. District Decision Tree

Module 1: Research questions and capacity

Module 2: Data and analytic approach

Module 3: Analysis and interpretation

Module 4: New data collection

Module 5: New questions, dissemination, and resources

Appendix B: Planning for Analysis Workbook

Appendix C: Planning for Action Workbook

Appendix D: Additional Resources

[a]Slides throughout this toolkit indicate when to check the decision tree.

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Regional Educational Laboratory Midwest

Regional Educational Laboratories
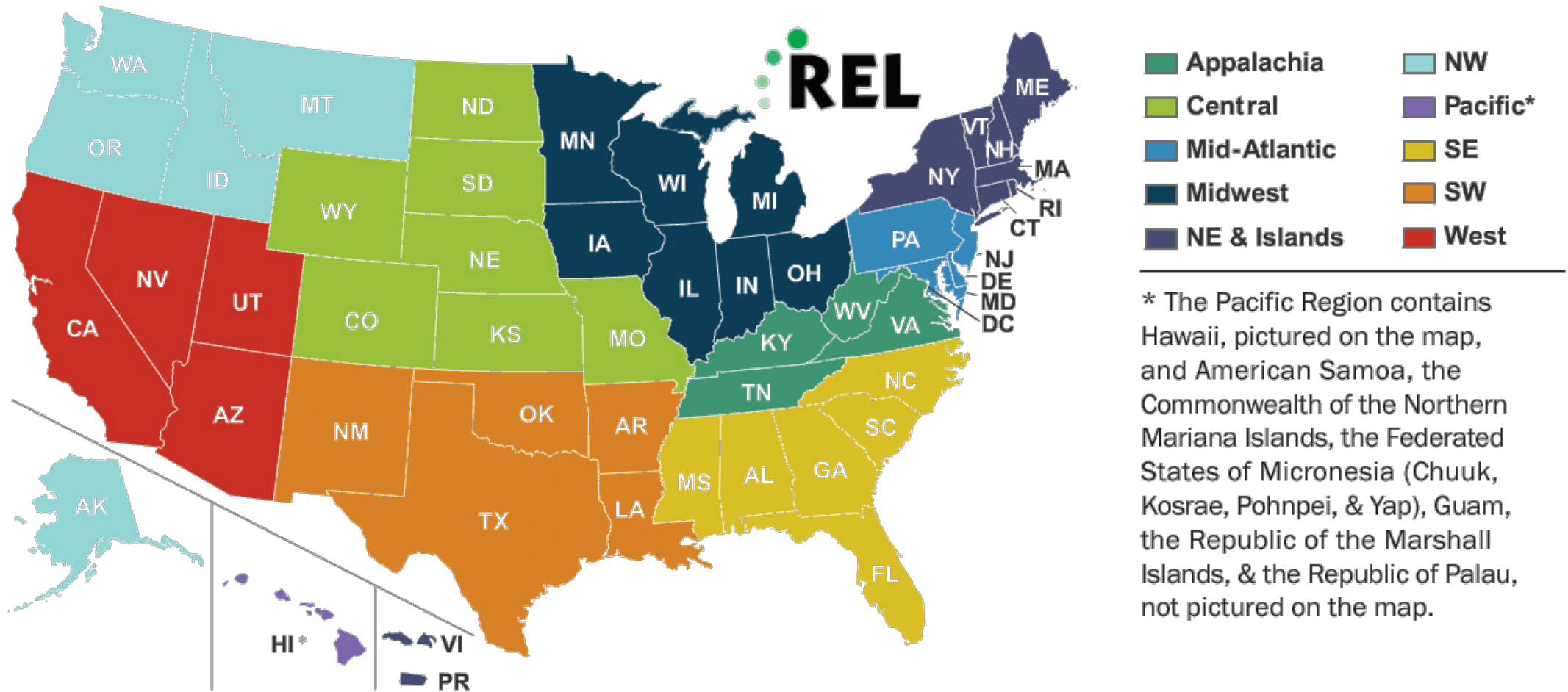
Types of support REL Midwest offers

Applied research studies that address partnerships' research questions

Events that support the dissemination and understanding of existing research

Workshops that support the use of data and research

Coaching that supports the use of data and research

Technical support such as survey, interview, or observation protocol development; literature reviews; or tool development.
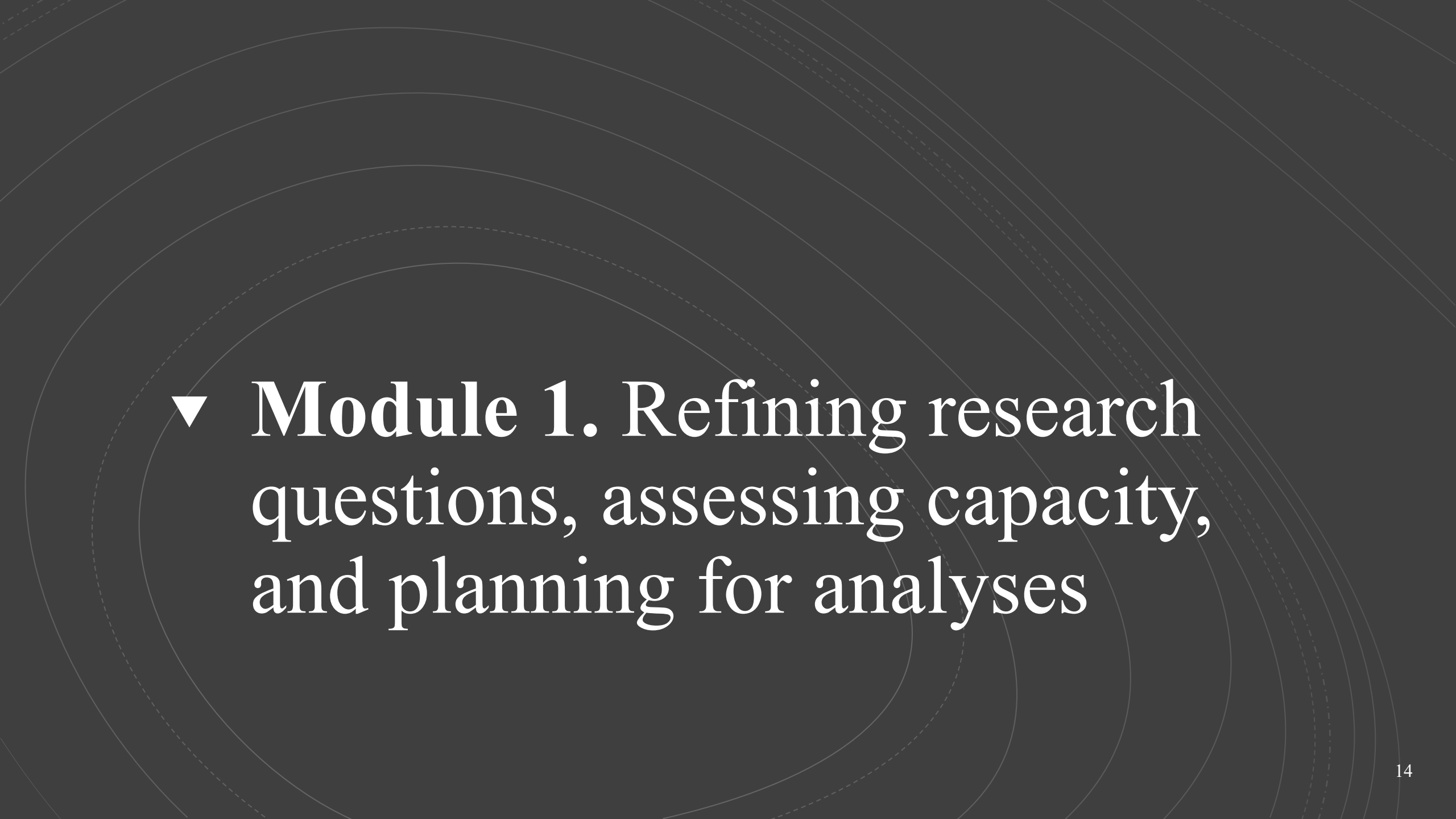
Reviews of studies and interventions to determine level of evidence to support ESSA implementation

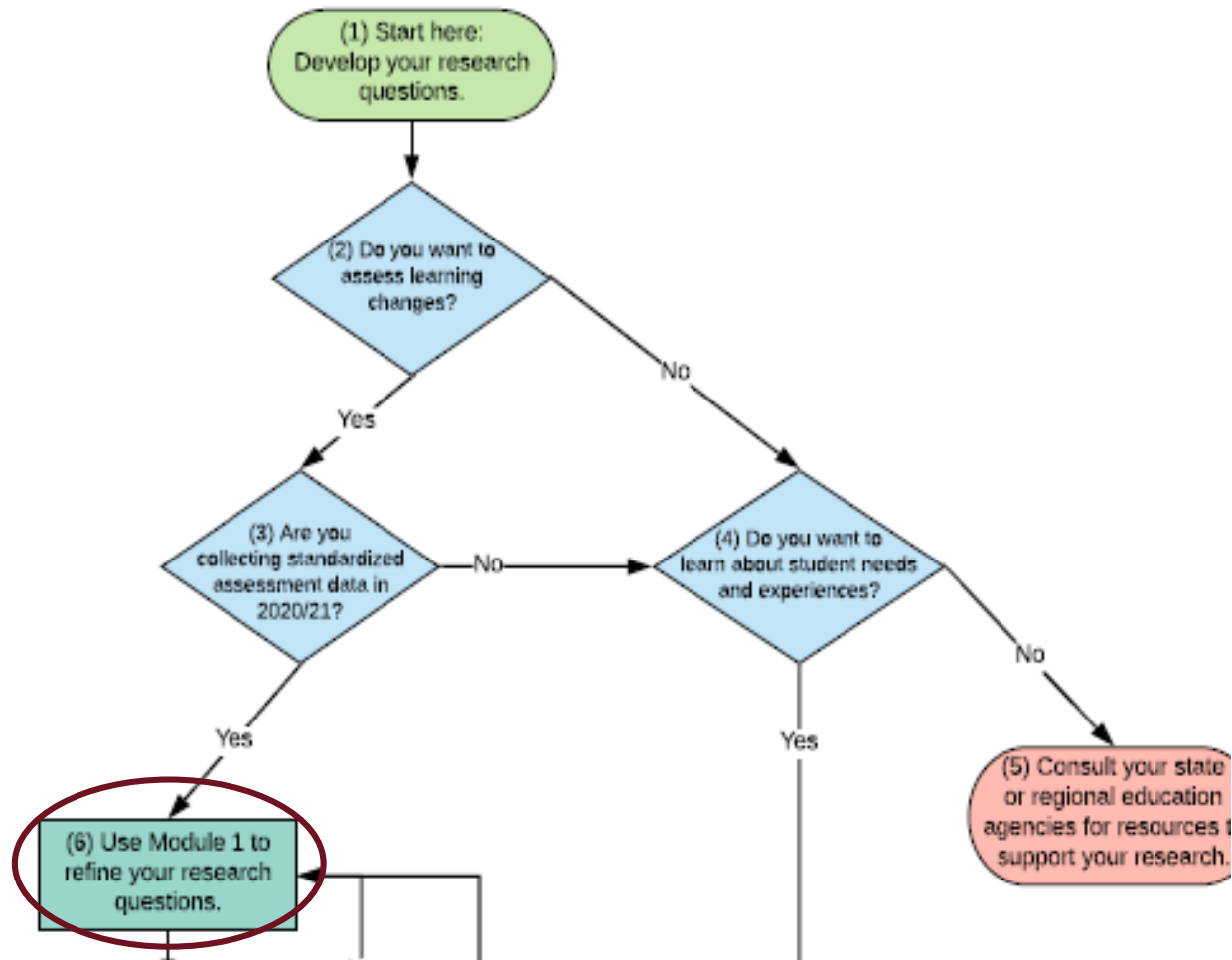**Ask A REL** annotated bibliographies produced in response to stakeholder questions

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REL Midwest states

▼ **Module 1.** Refining research questions, assessing capacity, and planning for analyses

Before beginning module 1, be sure you . . .

- have drafted initial research questions.
- landed at point 6 on the District Decision Tree.

Module 1 overview

Purpose:

Use this module to lay the groundwork for conducting your analysis.

Module 1 will guide you in the following steps:

- Refining your research questions.
- Assessing your capacity to answer them.
- Creating an action plan for data analyses.

Resources to use in this module:

- District Decision Tree.
- Planning for Analysis Workbook.
  - ✓ Begin Worksheet 1A.
  - ✓ Complete Worksheet 1B.

Refining your research questions

Translating language in this toolkit: What is a research question?

Research Question(s) **=** Questions of interest that are **specific, definable,** and **measurable** through extant data analysis or new data collection.

Refining your research questions: An example

Question: How are my students doing since COVID-19 began?

• *A start! However, this question is not specific and is not well defined in terms of the population or the outcome of interest.*

Question: Do my district's English learner students might need extra support post-COVID-19?

• *Closer! The population is defined, but the outcomes of interest are still not well defined.*

Question: Are post-COVID-19 learning changes in reading proficiency different for English learner students compared with other students in my district?

• *Yes! This research question is specific, and it defines the population and the outcome of interest.*

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The analyses outlined in <u>Modules 1–3</u> can be used to . . .

- Help **determine where to target extra resources or funding** for specific student groups that appear to have greater learning changes post-COVID-19.

- Conduct estimates during the year or across several years to **continue to monitor the trajectory of learning changes** post-COVID-19.
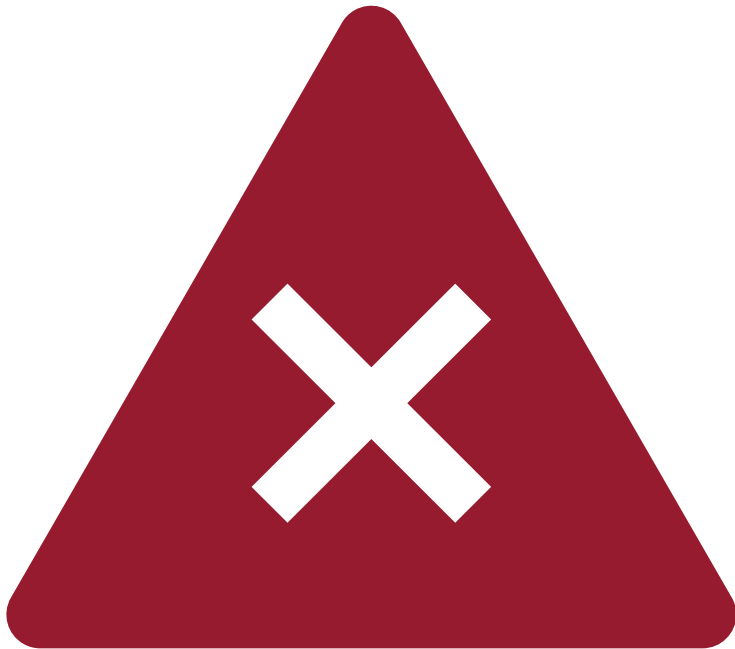
The analyses can address two types of research questions

How has student learning changed post-COVID-19?

Do student learning changes vary by student, school, or classroom characteristics?

These analyses **cannot** address the following types of research questions

- What is the isolated impact of COVID-19-related school closures on student achievement?

  Why? Changes in student learning *cannot be attributed to a single isolated cause*.

- Why might a given intervention or program appear to have effectively buffered students from learning changes?

  Why? Although you may be able to observe differences for students who experienced a given intervention or program, the analyses will not tell you *why the differences occurred*. The analyses *are not intended for intervention or program evaluations*.

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Cautions for districts using these analyses

There are **no comparison groups** unaffected by the COVID-19 pandemic.

These analyses **cannot measure or control for variation in the quality of instruction or student experience** during school closures.

These analyses **cannot quantify the magnitude or impact of corresponding events or other potentially related factors** (for example, family illness, job loss, trauma).

Refine your research questions

Using the guidance on the previous slides,

- discuss your research questions with your team and refine them so that they adhere to the guidance given in this module.

- use the **Planning for Analysis Workbook, Worksheet 1A,** to list your refined research questions.

Analytic framework (example): Worksheet 1A

Use Worksheet 1A in the Planning for Analysis Workbook. Complete the left column titled research question(s).

Research question(s)	Standardized assessments	Key factors to consider	Analytic approach and meaningful learning change
• How has student learning changed post-COVID-19? • Do student learning changes vary by student, school, or classroom characteristics?			

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# Assessing capacity and defining a plan for analyses

Capacity considerations

Using the **Planning for Analysis Workbook, Worksheet 1B,** discuss the following questions with your team:

- Who can clean data and assess data quality?

- Who can run analyses? What kinds of technical assistance do you need to prepare and perform analyses?

- What is the timeline to complete your analyses? Is this reasonable? Does the timeline allow you to share results with the appropriate audiences in time to assist with decisionmaking?

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Revisit the decision tree
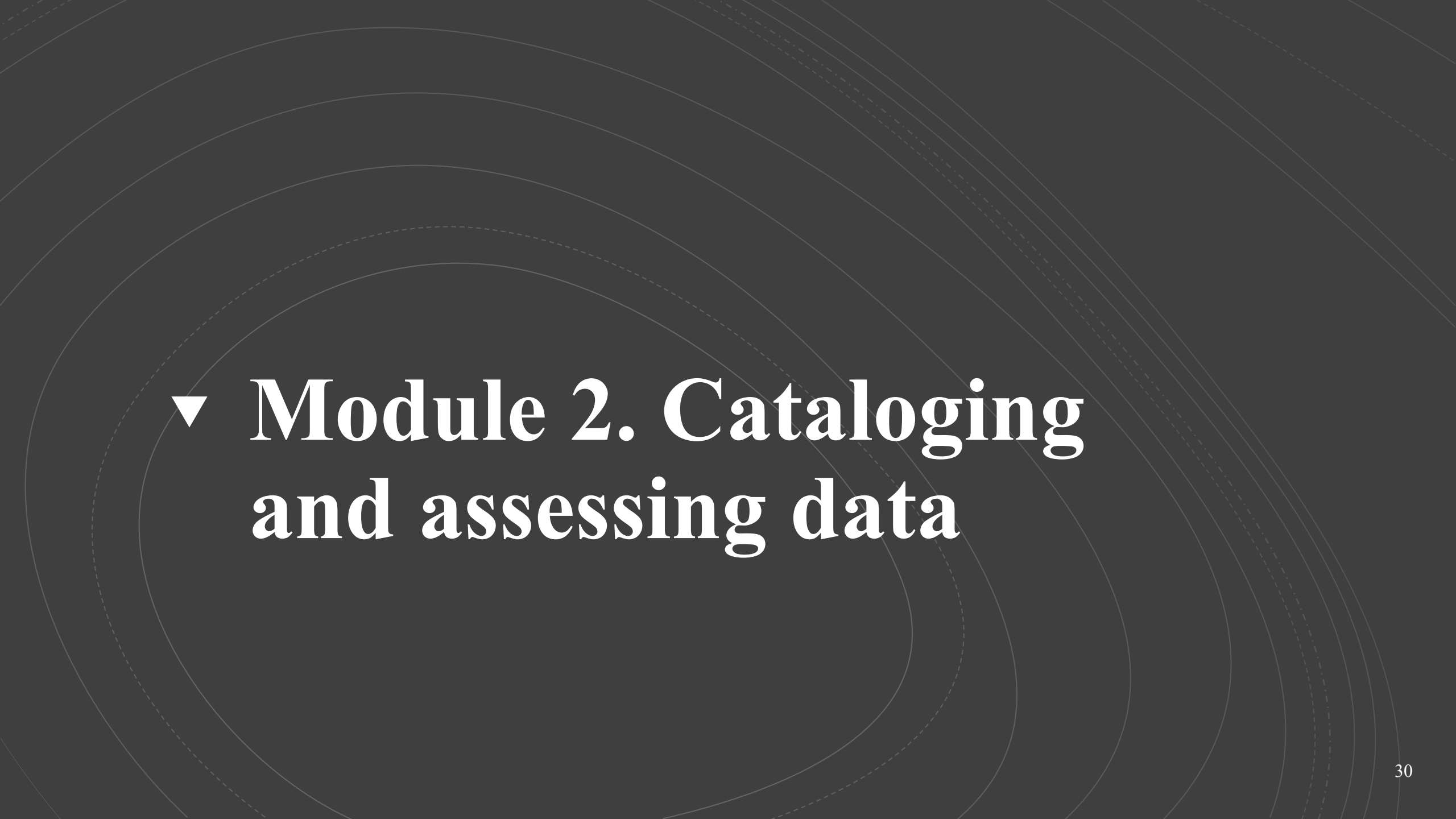
Follow the [decision tree](#) from decision points 1 to 11 to determine which module to use next.
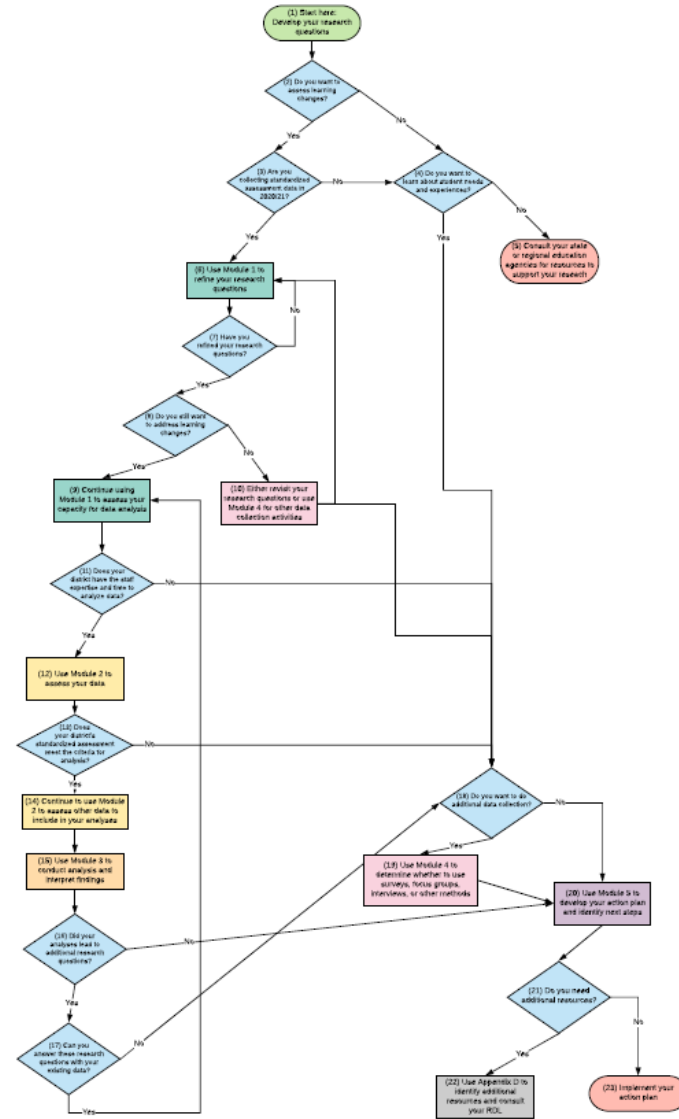
Before leaving module 1

- Determine where you are on the District Decision Tree.

- Move to the module indicated on the District Decision Tree.

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▼ **Module 2. Cataloging and assessing data**

Before beginning <u>module 2</u>, be sure you . . .

- have completed the prework in <u>Module 1</u>.

- landed at point 12 on the <u>District Decision Tree</u>.

Module 2 overview
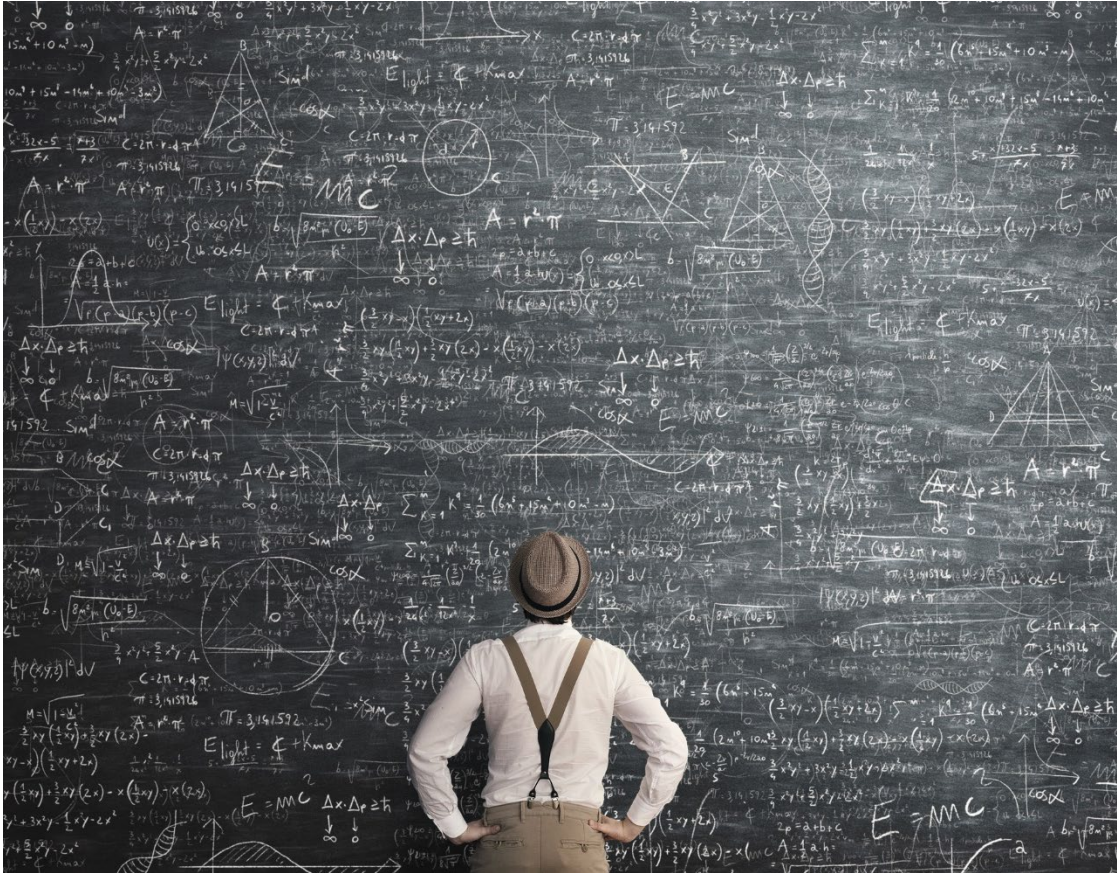
Purpose:

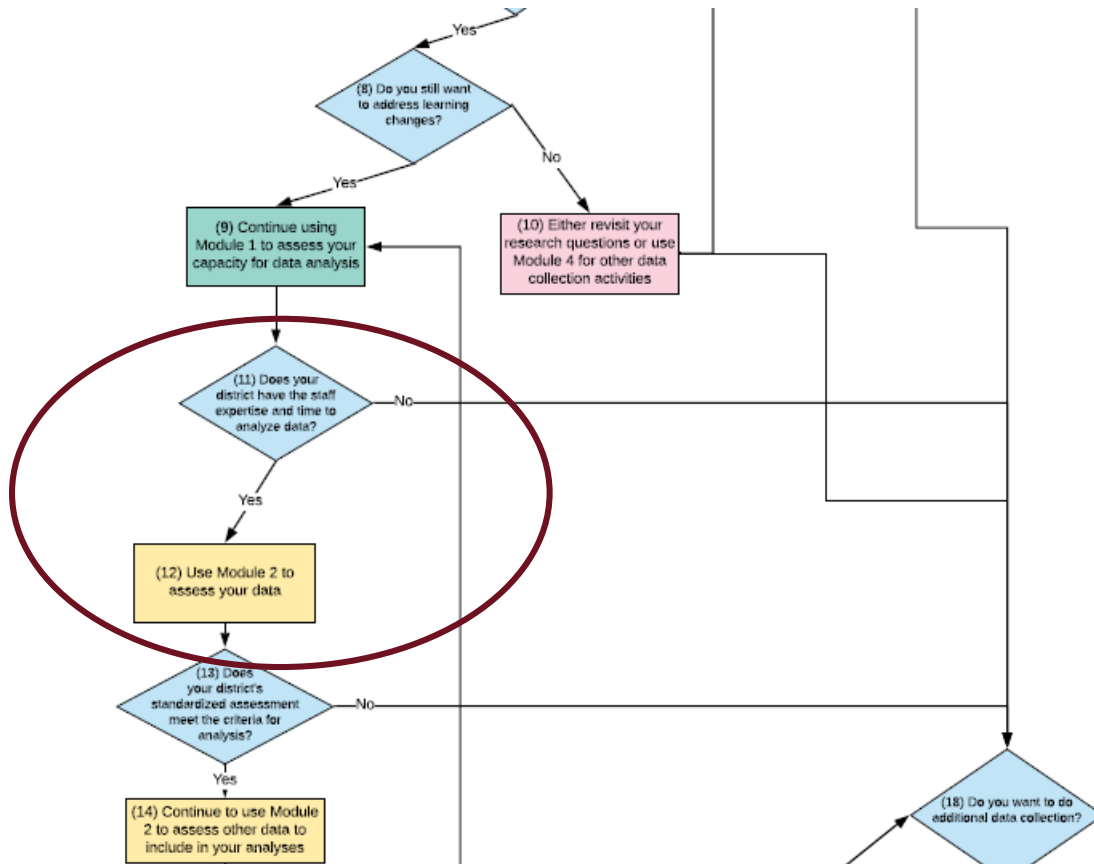Once you have determined that you have standardized assessment data and completed your analytic work plan (Worksheet 1B), use this module to aid in preparing your data and setting the groundwork for your analyses.

Module 2 will guide you in the following steps:

- Assessing your data quality and capacity.
- Preparing for your analyses.

Resources to use in this module:

- District Decision Tree.
- Planning for Analysis Workbook.
  - ✓ Worksheet 1A.
  - ✓ Worksheets 1C–1D.

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Looking closely at your data
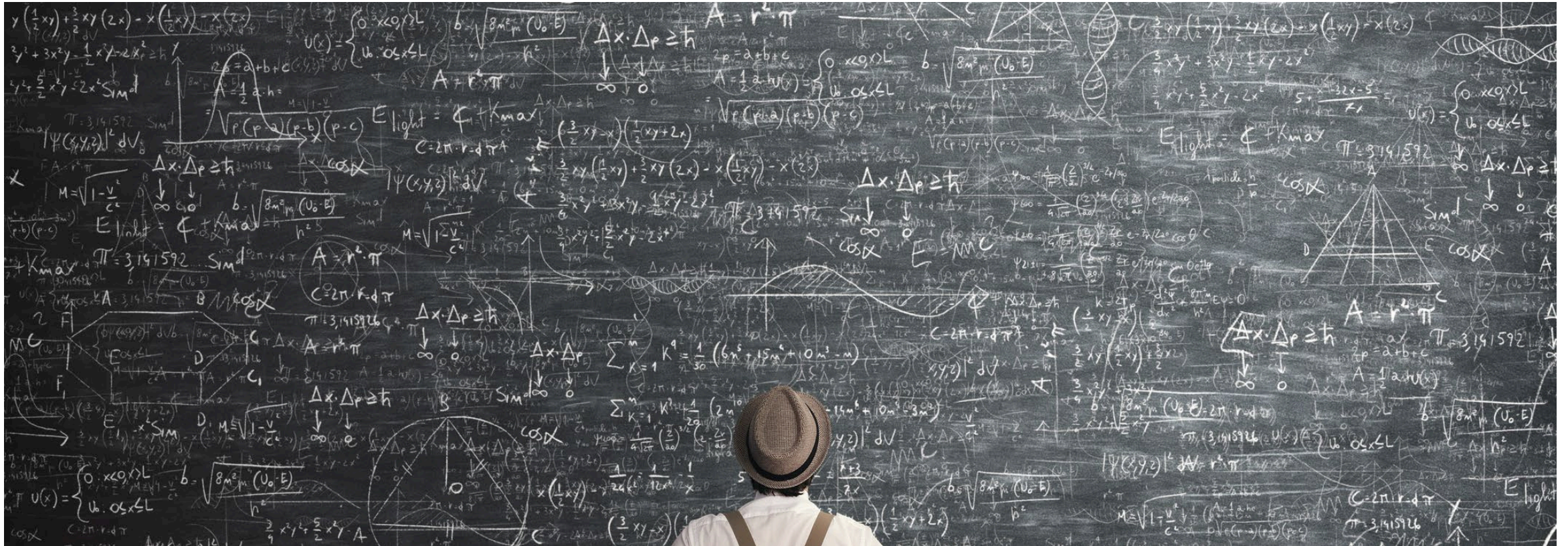
Evaluating standardized assessment data: Section overview
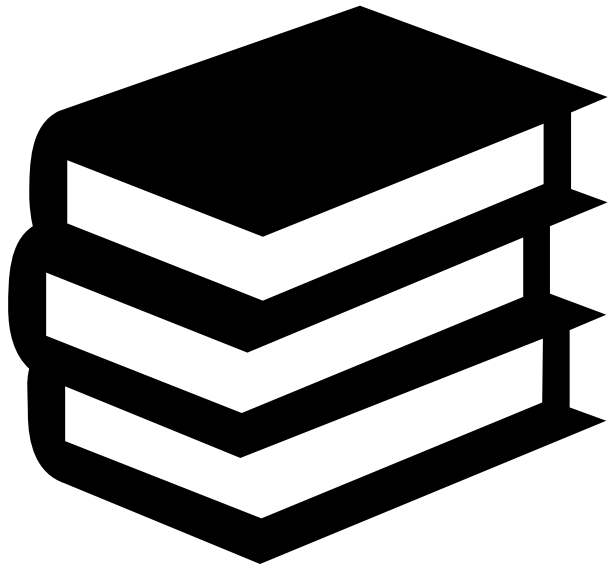
- These analyses determine learning changes by looking at standardized assessment data pre- and post-COVID-19.

- These analyses are intended to be carried out with standardized assessments administered districtwide.

- In the following section, use the **Planning for Analysis Workbook, Worksheet 1C,** and the guidance on the following slides to complete an inventory of your standardized assessment data.

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Evaluating standardized assessment data
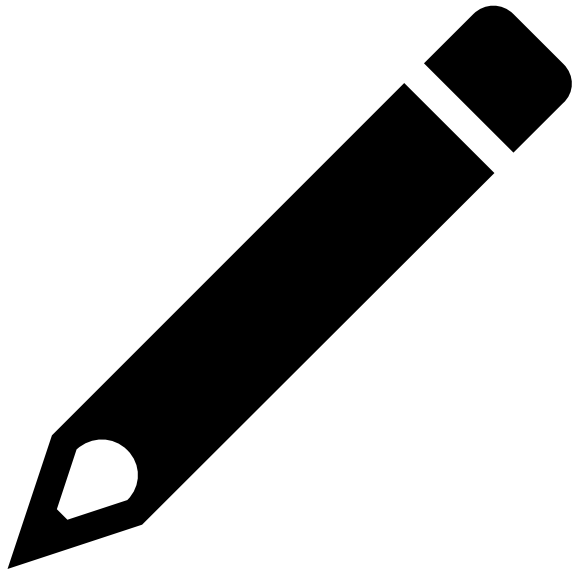
- Data **must** be available for multiple pre-COVID-19 time points and at least one post-COVID-19 time point.

  Why? *You will need multiple time points pre-COVID-19 to establish a preexisting trend in standardized assessments that you can compare with standardized assessments post-COVID-19.*

- Standardized tests in core subjects are administered regularly.

  Why? *Although not a perfect metric, standardized tests are more reliable for estimating change because of consistency in the testing content from year to year.*

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Evaluating standardized assessment data

Assessments **ideally should** be administered

- at the same time each year.

  Why? Seasonality can influence student performance on standardized assessments. Be cautious if using data from assessments administered at different times throughout the year.

- within the first month of the school year.

  Why? The earlier the timepoint of assessment, the earlier you will be able to conduct your analysis and use the results to inform decisionmaking.

Evaluating standardized assessment data: Assessing missing data

It is important to assess the missingness of your standardized assessment data pre- and post-COVID-19.

Why? *Missingness is most likely not random. That is, it is likely that certain populations of students are not represented in the post-COVID-19 standardized assessment data. For example, there may or may not be testing options for remote learners.*

Nonrandom missingness could have important implications for your findings. It is important to understand for whom data are missing and factor this into your analysis and interpretations of your findings.

Evaluating standardized assessment data: Data validation checks

An important step in data assessment is conducting a series of data validation checks. These include but are not limited to checks on the following:

- **Missing data:** What percentage of observations (for example, students) are missing data for a given variable? Does missingness vary by subgroup (for example, remote learners)?

- **Implausible values:** Do the data values fall within the expected ranges or categories?

- **Distribution:** Does the distribution of the data seem reasonable? Is there an unexpected skew? Are there outlier values?

*Take note of any issues that arise from your data validation checks on **Worksheets 1C and 1D in the Planning for Analysis Workbook.** Determine the implications from any issues and whether the issues will prevent you from using the data.*
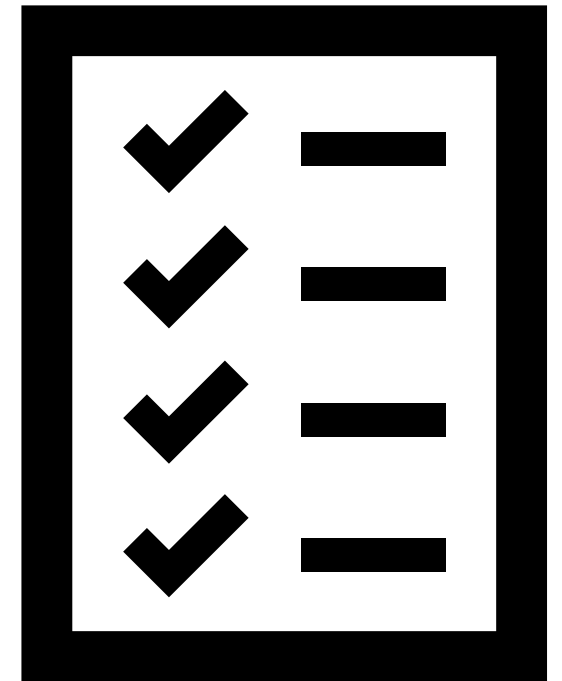
Evaluating standardized assessment data

Worksheet 1C: Data inventory: Standardized assessments

Purpose: Use this worksheet as part of Module 2 (Slides 30–39) to conduct an inventory of your standardized assessment data. **Complete the inventory of standardized assessment data BEFORE moving on to Worksheet 1D.** You cannot conduct these analyses without standardized assessment data. If you do not have standardized assessment data that you can use for this analysis, please return to the District Decision Tree to identify your next steps. See slide 38 for examples of routine data validation checks.

Standardized assessment	Data source	Time frame available	Will you administer in 2020/21?	Quality and completeness concerns	Access concerns	Other notes	Validation check?
Example: Northwest Evaluation Association Measures of Academic Progress Reading Fluency	Student testing records	Available since 2010; administered each fall, winter, and spring	Yes; will administer in fall 2020	No concerns before fall 2020. Concern that we may not be able to administer the test to all students in fall 2020.	None	Administered to K–5	☒
							☐
							☐
							☐
							☐

Step 1. Using the **Planning for Analysis Workbook, Worksheet 1C,** as a guide, discuss the following with your team:

- Which standardized assessments align with the guidance in this module?

- When will you conduct your first standardized assessment post-COVID-19?

- Do you have concerns with the quality or completeness of the post-COVID-19 standardized assessment data? How will you validate these data?

Step 2. After completing Worksheet 1C, use Worksheet 1A to list your standardized assessments and their corresponding data sources.

Analytic framework (example): <u>Worksheet 1A</u>

Return to <u>Worksheet 1A in the Planning for Analysis Workbook</u>. Complete the two columns under standardized assessments. Make sure to list the assessment outcome and associated data source in the worksheet.

Research question(s)	Standardized assessments	Key factors to consider	Analytic approach and meaningful learning change
• How has student learning changed post-COVID-19? • Do student learning changes vary by student, school, or classroom characteristics?	**Outcomes:** • District standardized assessment 1 • District standardized assessment 2 **Data sources:** • Student scores on district standardized assessment 1 and district standardized assessment 2 from 2020/21 and the preceding three to five academic years		

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Revisit the decision tree

Review decision points 12 and 13 on the decision tree to determine your next steps.
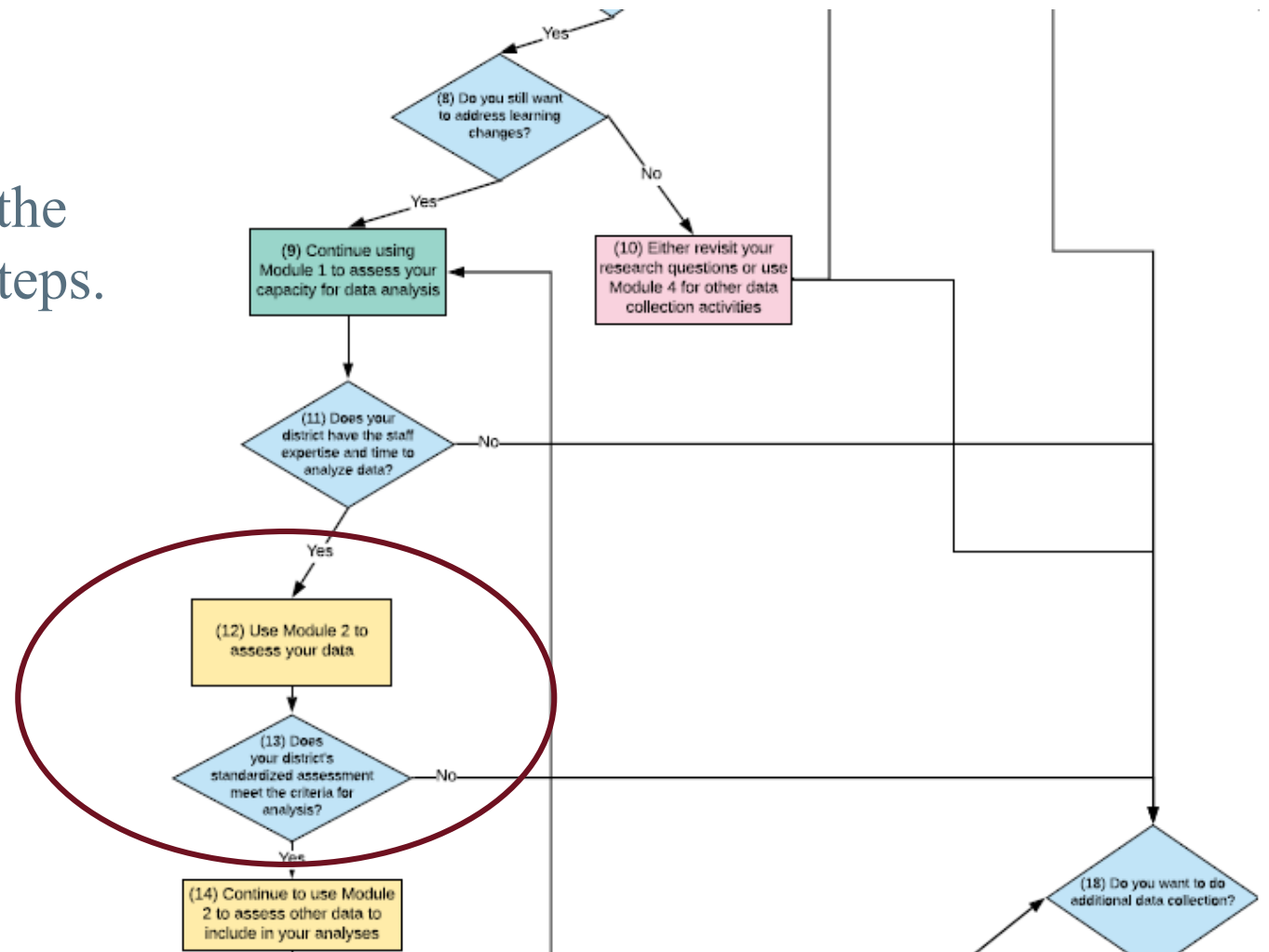
Evaluating additional data to use in your analysis

- These analyses determine learning changes by looking at standardized assessment data pre- and post-COVID-19.

- However, **differential patterns in learning changes may exist for different groups of students or different school or classroom settings.**

- The following slides outline considerations for additional data to help identify differential patterns of learning changes.

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Evaluating additional data: Student characteristics

- What student groups are of interest given your district and community contexts?

- Consider what **decisions for resource allocation** could be informed by analyzing different student groups.

- Discuss whether there are **reasons to prioritize** different student groups for your analyses.

Note: The student factor groups listed here are examples. The language used to describe these groups is based on Ohio Department of Education common descriptors. Your district may use different student group descriptors.

Example student factors:

Age	Gender	Race/ethnicity
Economically disadvantaged	English learner student	Justice-involved students
Students with disabilities	Foster care	Homeless youth
Remote learner		

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Evaluating additional data: Classroom and school characteristics

- What school and classroom characteristics are of interest in analyses?

- Consider what **decisions for resource allocation** could be informed by analyzing different school and classroom factors.

- Discuss whether there are **reasons to prioritize** different school or classroom characteristics for your analyses.

Note: The classroom and school factors listed here are examples. The language used to describe these groups is based on Ohio Department of Education common descriptors. Your district may use different student group descriptors.

Example school and classroom factors:

Percentage of students who are White	Percentage of students who are economically disadvantaged
Percentage who are English learner students	Percentage of students with a disability
Percentage of teachers with a master's degree or higher	Percentage of teachers with three or more years of teaching experience

Identifying differential patterns in COVID-19 learning changes

After determining student, school, and classroom factors of interest,

- **Step 1:** Use Worksheet 1D to complete an inventory of your additional data.

- **Step 2:** Return to Worksheet 1A to list these factors and their corresponding data sources.

Worksheet 1D: Data inventory: Additional data

Purpose: Use this worksheet as part of Module 2 to complete the data inventory, focusing on additional data to potentially include in your analyses. See slide 36 for examples of routine data validation checks. List available data sources, along with items they contain, and flag any concerns or considerations.

Data source	Items to use	Timeframe available	Quality and completeness concerns	Access concerns	Other notes	Validation check?
Example: Student administrative records	Economically disadvantaged, race/ethnicity, English learner	Available since 2000; third week in September each year	Records missing for students who enroll after the third week in September	None	Mary will reach out to Erin to secure data by 10/1	☒
						☐
						☐
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Analytic framework (example): Worksheet 1A

Return to Worksheet 1A in the Planning for Analysis Workbook. Complete the columns under key factors to consider. Make sure to identify the key factor and the associated data source in the worksheet.

Research question(s)	Standardized assessments	Key factors to consider	Analytic approach and meaningful learning change
• How has student learning changed post-COVID-19? • Do student learning changes vary by student, school, or classroom characteristics?	**Outcomes:** • District standardized assessment 1 • District standardized assessment 2 **Data sources:** • Student scores on district standardized assessment 1 and district standardized assessment 2 from 2020/21 and the preceding three to five academic years	**Factors:** • Student factors (for example, race/ethnicity) • Classroom factors (for example, grade level) • School factors (for example, percentage of teachers with three or more years of experience) **Data sources:** • District administrative records	

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Before leaving module 2

- Complete Worksheets 1B–1D in the Planning for Analysis Workbook.

- Determine where you are on the District Decision Tree to identify the next module.

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▼ **Module 3. Conducting analyses and interpreting findings**

Before beginning <u>module 3</u>, be sure you . . .
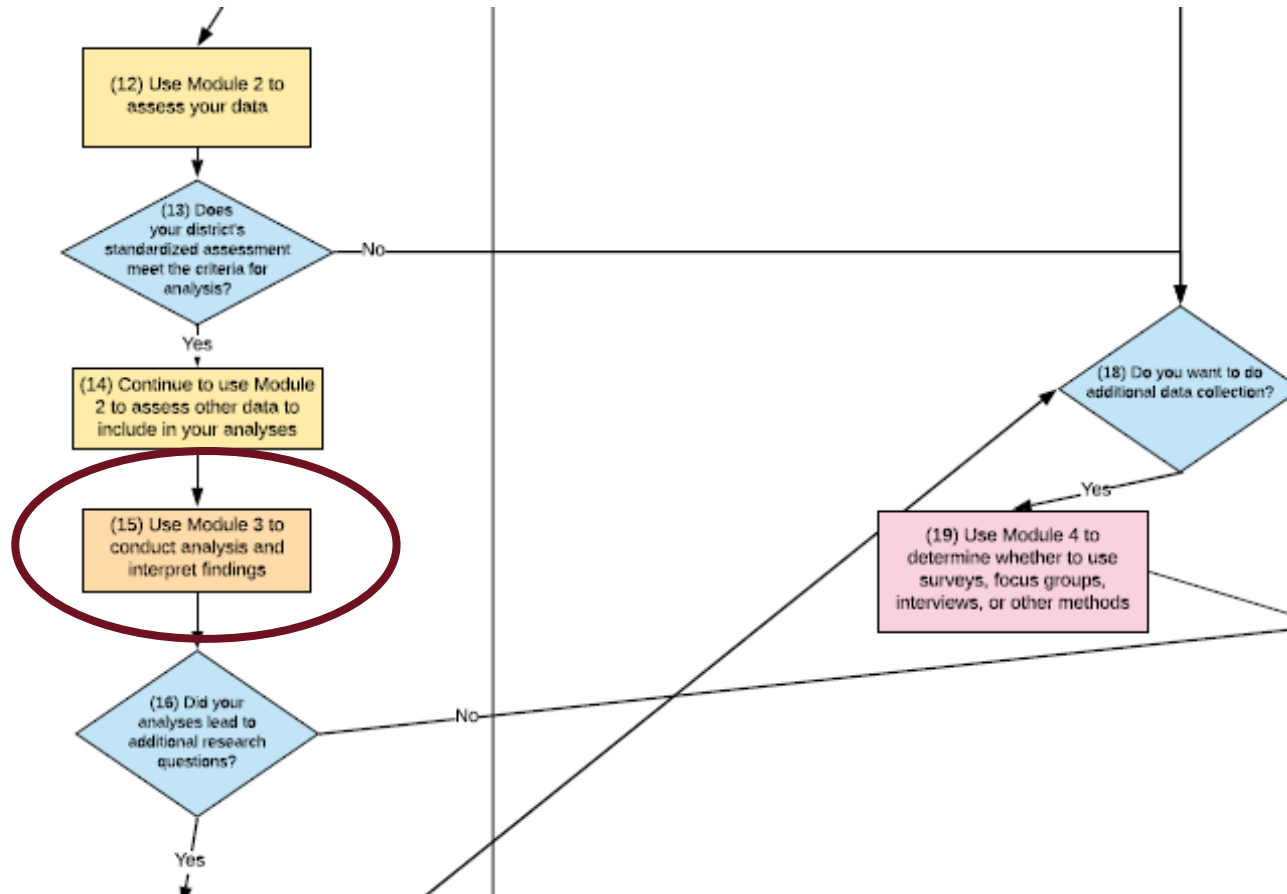
- have completed <u>modules 1</u> and <u>2</u>.

- landed at point 15 on the <u>District Decision Tree</u>.

Module 3 overview

Purpose:

After determining your research questions, assessing your capacity, and identifying your data, use this module to aid in conducting your analysis and interpreting your findings.

Module 3 will guide you in the following steps:

- Deciding your analytic approach.
- Interpreting your findings.

Resources to use in this module:

- District Decision Tree.
- Planning for Analysis Workbook.
  - ✓ Worksheet 1A.
  - ✓ Completed Worksheets 1B–1D.
- Planning for Action Workbook: Worksheet 2A.

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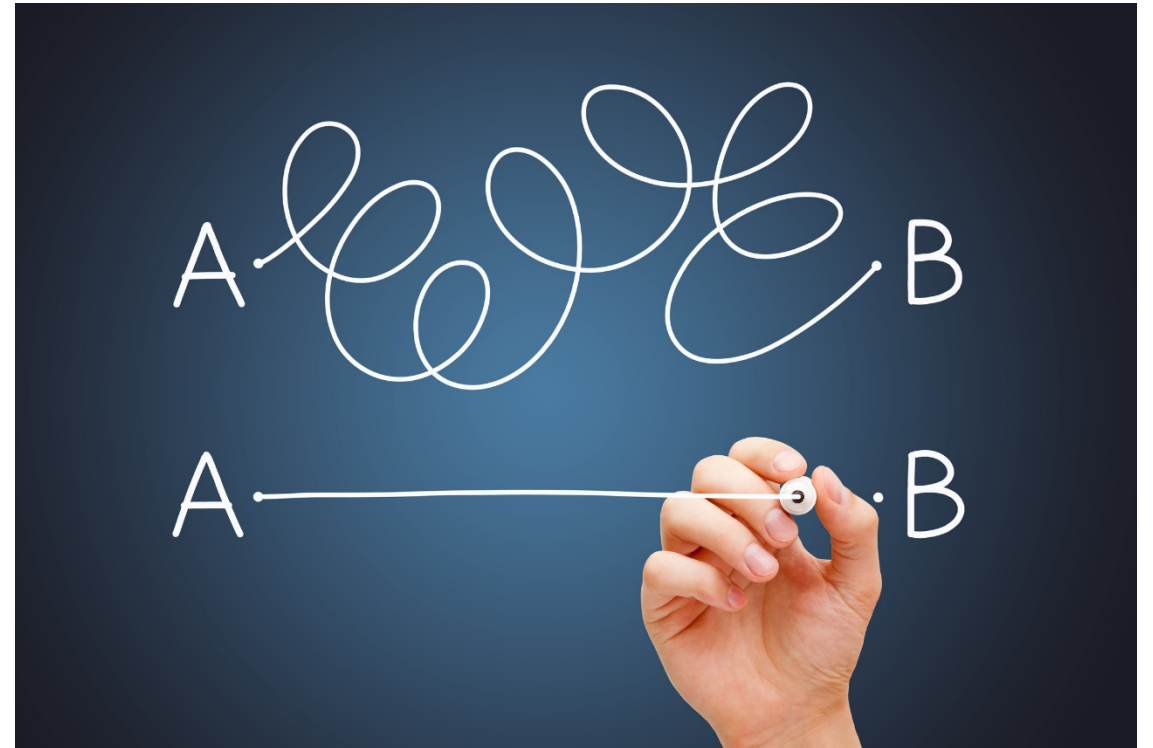
Considerations for your analytic approach: Meaningful differences

Step 1. Now that you have identified and prepared your data and determined your factors of interest, consider the following question with your team: What would constitute a **meaningful learning change** for a given standardized assessment?

- For example, you might consider any decline from the previous year or a difference from the projected trend.

- Is there a threshold that is reasonable given your knowledge of the standardized assessments and outcomes across time?

Step 2. Record your meaningful learning change in the rightmost column of **Worksheet 1A** in the Planning for Analysis Workbook.

Analytic framework (example): Worksheet 1A

Return to Worksheet 1A in the Planning for Analysis Workbook. Complete the columns under analytic approach and meaningful learning change.

Research question(s)	Standardized assessments	Key factors to consider	Analytic approach and meaningful learning change
• How has student learning changed post-COVID-19? • Do student learning changes vary by student, school, or classroom characteristics?	**Outcomes:** • District standardized assessment 1 • District standardized assessment 2 **Data sources:** • Student scores on district standardized assessment 1 and district standardized assessment 2 from 2020/21 and the preceding three to five academic years	**Factors:** • Student factors (for example, race/ethnicity) • Classroom factors (for example, grade level) • School factors (for example, percentage of teachers with three or more years of experience) **Data sources:** • District administrative records	**Methodological approach:** **Meaningful learning change:** District's decision (may vary by research question)

Considerations: Choosing your analytic approach

What kind of analytic approach makes sense given your data and your analytic capacity? *This table outlines some considerations for each approach.*

	Means comparison	Longitudinal model
Knowledge level required	Does not require a high level of statistical expertise	Requires a high level of statistical expertise
Allows for	Observing trends and making comparisons pre- and post-COVID-19	Estimating student learning in the presence of and absence of COVID-19
Can be most useful for	Looking at means for specified populations	Looking at the relationship for each factor (for example, student race/ethnicity) while controlling for all factors in the model (for example, eligibility for free or reduced-price lunch)

*Remember that **neither option provides causal inferences.***

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Analytic approach brainstorming activity

After considering what constitutes a meaningful learning change for each standardized assessment and considering an analytic approach, complete the following steps:

- **Step 1:** Discuss the different analysis options.

- **Step 2:** Discuss which methodology best aligns with your research questions, data, and statistical capabilities.

- **Step 3:** Use the analytic framework (Worksheet 1A) to list the details of your analytic approach (example on the following slide).

Analytic framework (example): <u>Worksheet 1A</u>

Return to <u>Worksheet 1A in the Planning for Analysis Workbook</u>. Complete the columns under analytic approach and meaningful learning change.

Research question(s)	Standardized assessments	Key factors to consider	Analytic approach and meaningful learning change
• How has student learning changed post-COVID-19? • Do student learning changes vary by student, school, or classroom characteristics?	**Outcomes:** • District standardized assessment 1 • District standardized assessment 2 **Data sources:** • Student scores on district standardized assessment 1 and district standardized assessment 2 from 2020/21 and the preceding three to five academic years	**Factors:** • Student factors (for example, race/ethnicity) • Classroom factors (for example, grade level) • School factors (for example, percentage of teachers with three or more years of experience) **Data sources:** • District administrative records	**Methodological approach:** District's decision (may vary by research question) **Meaningful learning change:** District's decision (may vary by research question)

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Example district: Conducting analyses and viewing results

The following slides illustrate what it might look like for a district to use a means comparison and an interrupted time series (ITS) approach with the same data and same research questions about learning changes. ***This is a hypothetical illustration.***

- Slides 57–59 show example results from a **means comparison** analysis.

- Slides 60–62 show example results from an **ITS analysis** using a regression model.

The examples provided do not use real data.

Example district: Conducting a means comparison analysis

Research question(s)	Standardized assessments	Key factors to consider	Analytic approach and meaningful learning change
1. How has student learning changed on the district mathematics assessment post-COVID-19? 2. Do student learning changes vary for students who are economically disadvantaged compared with students who are not economically disadvantaged?	**Outcomes:** • Mathematics standardized assessment (Note: scores standardized to a mean of 0 and a standard deviation of 1) **Data sources:** • Student scores on the district mathematics standardized assessment, administered each fall, 2015/16–2020/21	**Factors:** • Student economic disadvantage status **Data sources:** • District administrative records	**Methodological approach:** • Means comparison **Meaningful learning change:** • 0.10 standard deviation constitutes a meaningful learning change.

Note: Sample display. The table does not reflect the analytic framework of a real district.

Example district: Means comparison results: Research question 1

		Mean score	Change from previous year
	Fall 2015	-0.26	—
	Fall 2016	-0.15	0.11
Pre-COVID-19	Fall 2017	0.03	0.18
	Fall 2018	0.18	0.15
	Fall 2019	0.30	0.12
Post-COVID-19	Fall 2020	-0.12	-0.42

Note: Sample display. The table does not reflect real data.

RQ1. How has student learning changed on the district mathematics assessment post-COVID-19?

The mean score fell by 0.42 standard deviation.

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Example district: Means comparison results: Research question 2

RQ2. Do student learning changes vary for students who are economically disadvantaged compared with students who are not economically disadvantaged?

Students who are **not** economically disadvantaged

		Mean score	Change from previous year
	Fall 2015	0.51	—
	Fall 2016	0.67	0.16
Pre-COVID-19	Fall 2017	0.8	0.13
	Fall 2018	1.02	0.22
	Fall 2019	1.19	0.17
Post-COVID-19	Fall 2020	0.91	-0.28

The mean score fell by 0.28 standard deviation.

Students who are **economically disadvantaged**

Mean score	Change from previous year
-1.03	—
-0.90	0.13
-0.84	0.06
-0.69	0.15
-0.58	0.11
-1.14	-0.56

The mean score fell by 0.56 standard deviation.

Note: Sample display. The table does not reflect real data.

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Example district: Conducting an ITS analysis

Research question(s)	Standardized assessments	Key factors to consider	Analytic approach and meaningful learning change
1. How has student learning changed on the district mathematics assessment post-COVID-19? 2. Do student learning changes vary by student free or reduced-price lunch status?	**Outcomes:** • Mathematics learning assessment (Note: scores standardized to a mean of 0 and a standard deviation of 1) **Data sources:** • Student scores on the district mathematics standardized assessment, administered each fall, 2015/16–2020/21	**Factors:** • Student economic disadvantage status **Data sources:** • District administrative records	**Methodological approach:** • ITS analysis *Notes on the statistical model:* • Controls for a series of student-, classroom-, and school-level characteristics. • Includes a variable to represent time, which increases in single-unit intervals for each month included in the study period. • Includes an indicator variable equal to 1 for times that occur post-COVID-19 and 0 otherwise. • Includes an interaction term between the COVID-19 variable an indicator variable equal to 1 if a student was eligible for free or reduced-price lunch and equal to 0 otherwise. **Meaningful learning change:** • 0.10 standard deviation constitutes a meaningful learning change.

Note: Sample display. The table does not reflect the analytic framework of a real district.

Example district: ITS analysis results: Research question 1

RQ1. How has student learning changed on the district mathematics assessment post-COVID-19?

COVID-19 (schools closed spring 2020)

Pre-COVID-19 trend 0.30

Post-COVID-19 estimate 0.05

On average, the estimated post-COVID learning change was 0.25 standard deviation, all else being equal.

Standardized score on district mathematics assessment

Fall 2015   Fall 2016   Fall 2017   Fall 2018   Fall 2019   Fall 2020
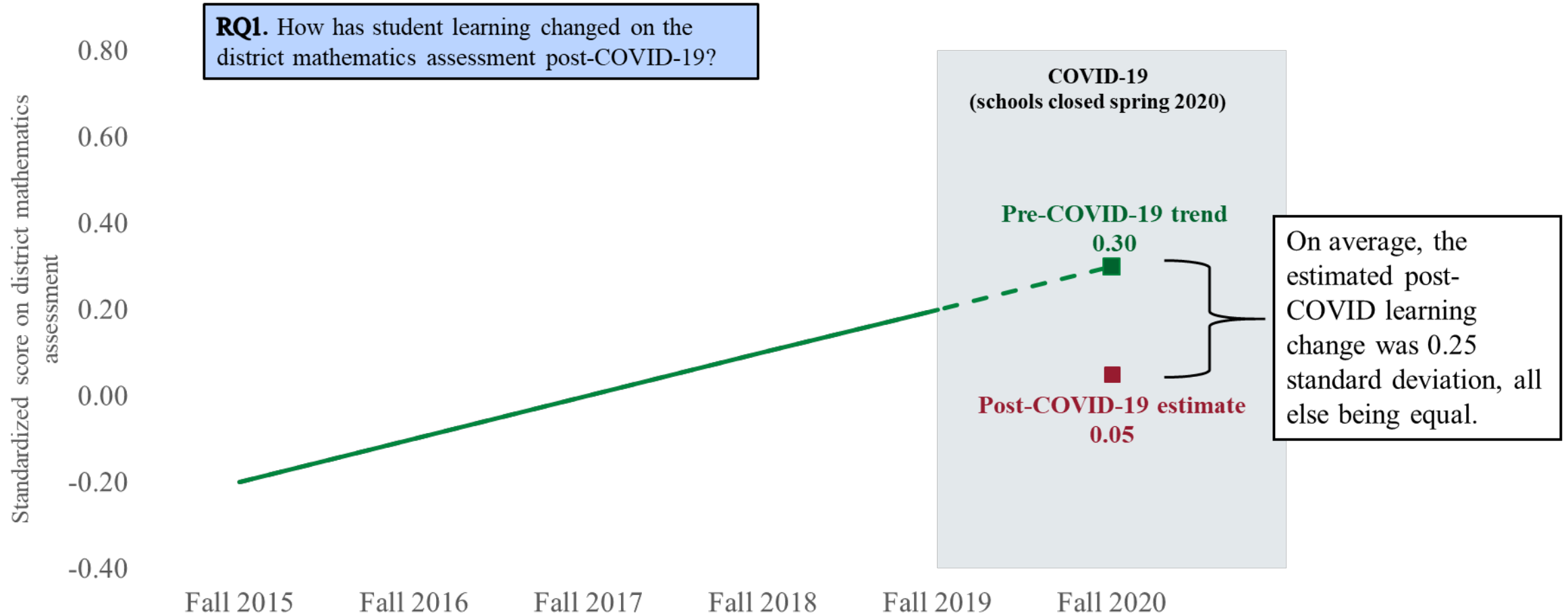
Notes: This is a sample display; the figure does not represent real data. To produce the figure, student, school, and classroom covariates were set at their mean value (if continuous) or the reference value (if categorical).

Example district: ITS analysis results: Research question 2

RQ2. Do student learning changes vary for students who are economically disadvantaged compared with students who are not economically disadvantaged?

COVID-19
(schools closed spring 2020)

Pre-COVID-19 trend
0.40

Students who are **not** economically disadvantaged

Post-COVID-19 estimate
0.25

On average, the estimated learning change for students who are **not economically disadvantaged** was 0.15 standard deviation, all else being equal.

Pre-COVID-19 trend
0.20

Students who are **economically disadvantaged**

Post-COVID-19 estimate
-0.10

On average, the estimated learning change for students who are **economically disadvantaged** was 0.30 standard deviation, all else being equal.

Standardized score on district mathematics assessment

0.80, 0.60, 0.40, 0.20, 0.00, -0.20, -0.40

Fall 2015   Fall 2016   Fall 2017   Fall 2018   Fall 2019   Fall 2020

Notes: This is a sample display; the figure does not represent real data. To produce the figures, the indicator for economically disadvantaged set to 0 or 1, plus all other school and classroom covariates, were set at their mean value (if continuous) or the reference value (if categorical).

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What are your analyses telling you?
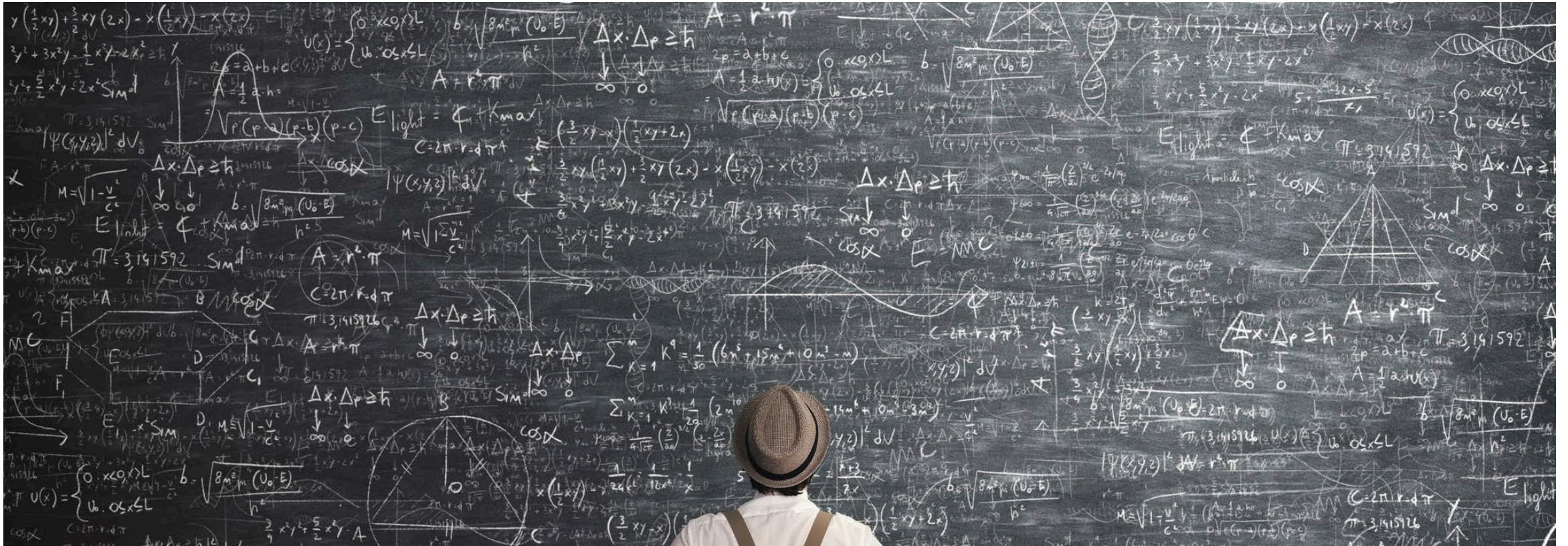
Interpreting findings: Important considerations

These analyses **cannot isolate the impact of school closures** or the quality of remote learning after closures.

These analyses **cannot isolate other conflating circumstances,** such as trauma, poverty, racial bias, job loss from school closure, or remote learning experiences.

Collecting data consistently and continuing to conduct analyses will reveal the trajectory of loss and any mitigation across time.

Interpreting findings: Observing learning changes

Using the meaningful learning change identified on <u>Worksheet 1A</u> as a reference,

- do you observe an overall learning change?

- do you observe learning changes for any student groups or in any school or classroom settings?

- how do the sizes of the differential learning changes compare?

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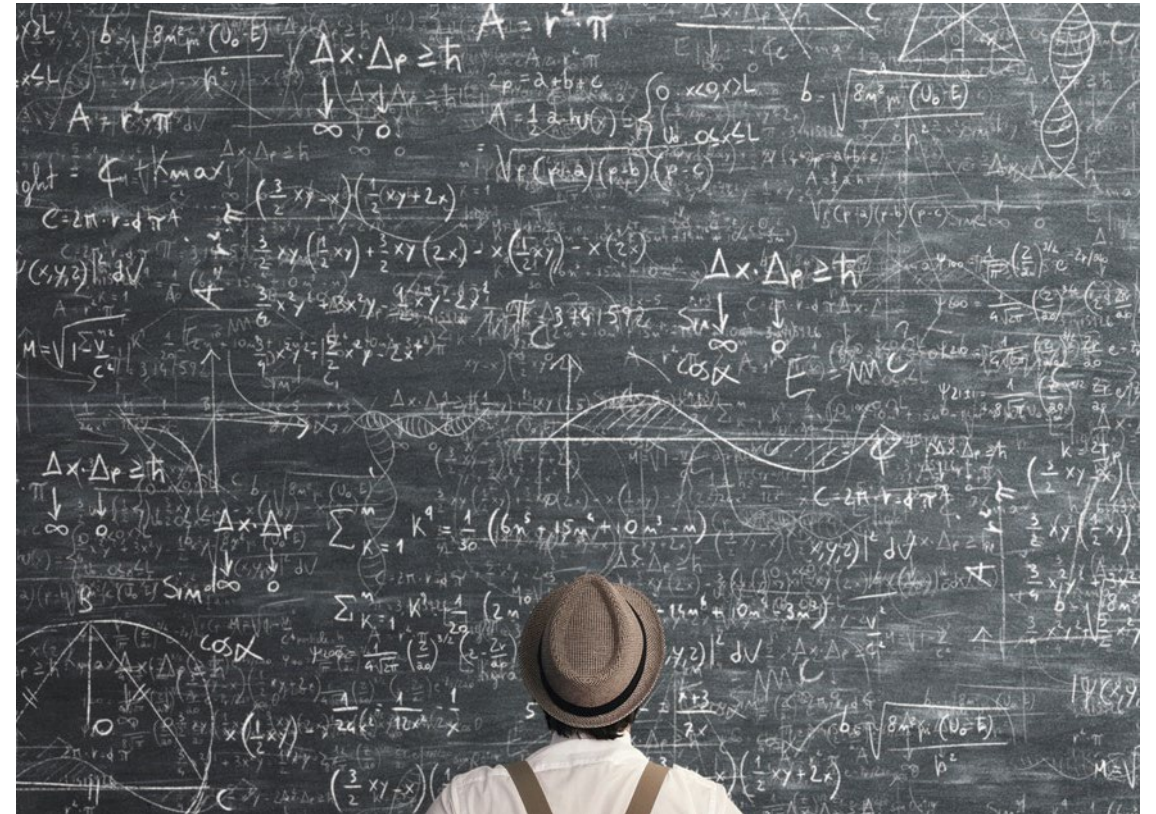
# Interpreting findings: Reflecting on your findings
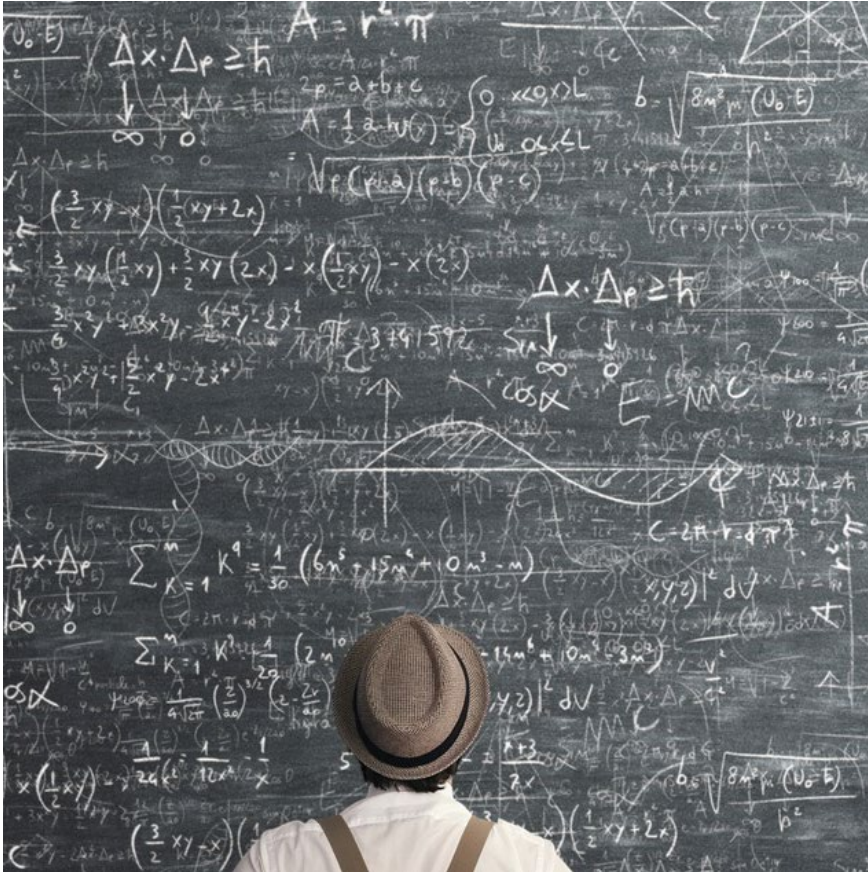
Discuss the following questions with your team:

- Do the findings surprise you or are they in line with your expectations?

- What events or circumstances may have contributed to the differential learning changes you observe?

- What could be making the observed learning change greater or smaller? For example, might some students have more computing access or have access to other supports?

- Identify additional research questions and note them in Worksheet 2A of the Planning for Action Workbook.

- Go to point 16 on the District Decision Tree; did the findings lead to other analyses that you can explore with your current data or through additional data collection efforts?

Revisit the decision tree

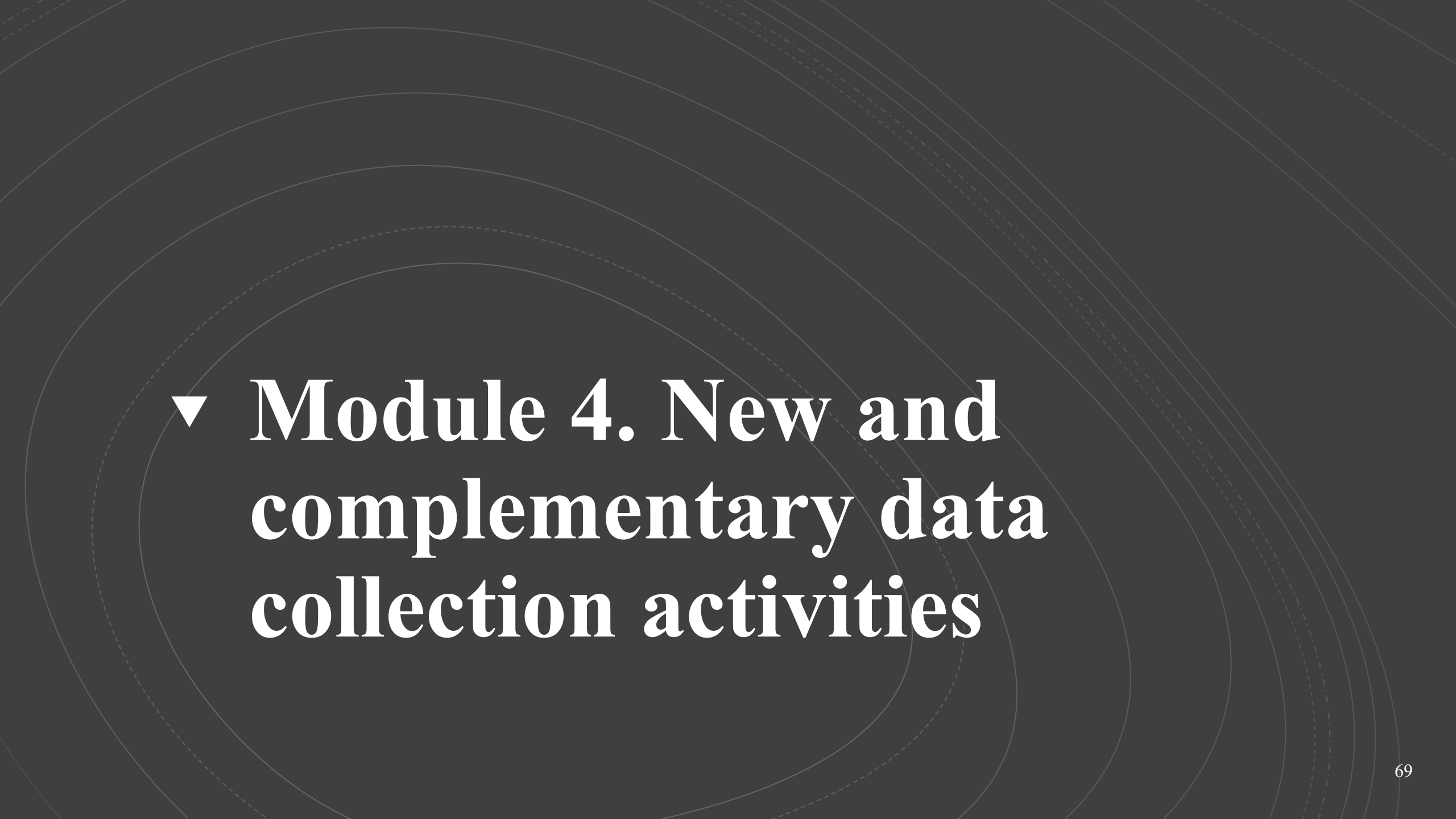Based on your discussion, review decision points 16 and 17 to determine your next steps.
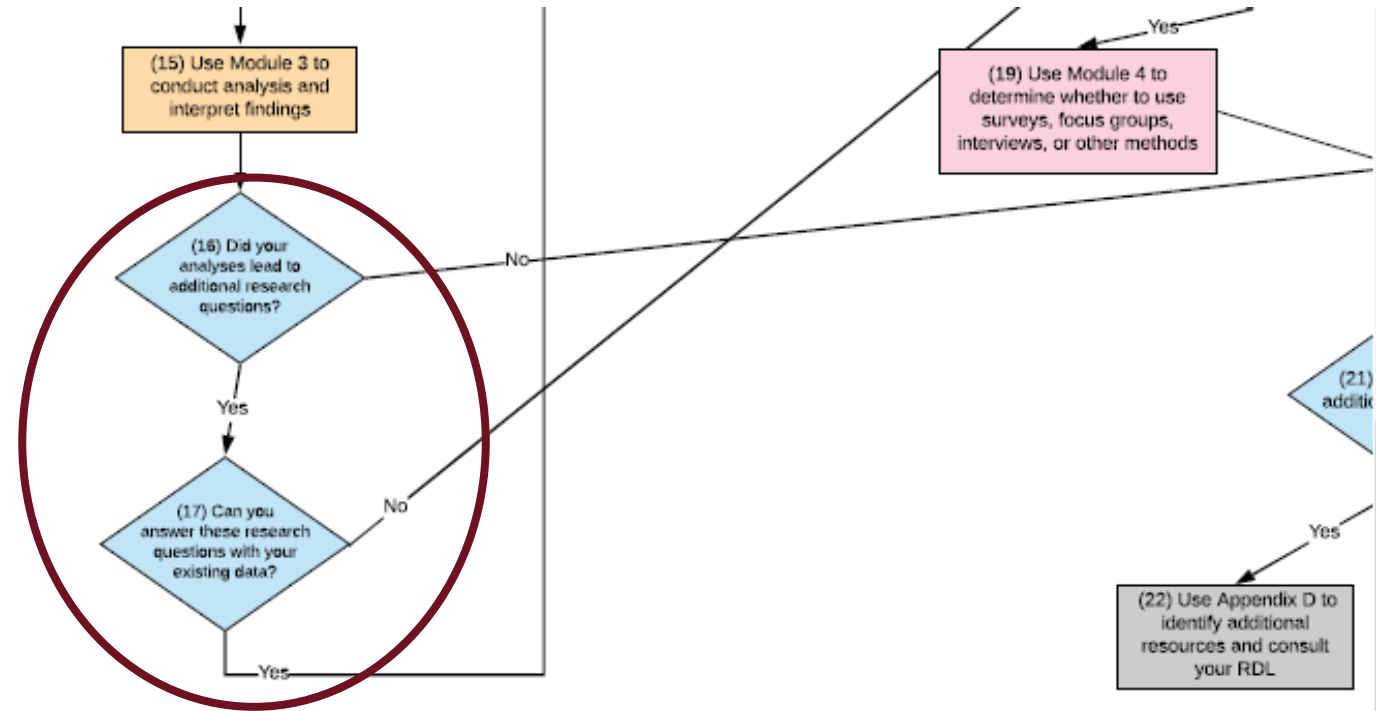
Before leaving module 3

- Determine where you are on the District Decision Tree.

▼ **Module 4. New and complementary data collection activities**

Before beginning <u>module 4</u>, be sure . . .
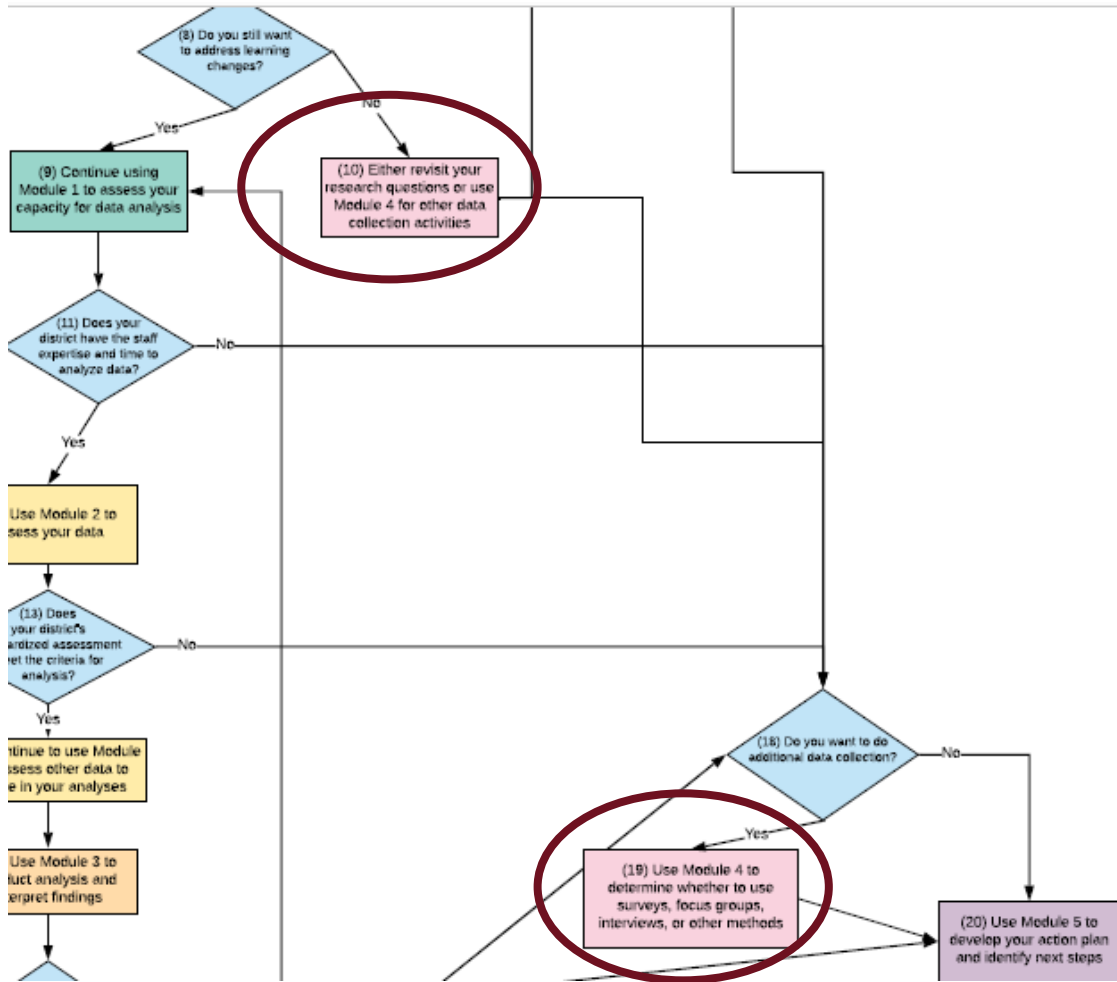
- your research questions call for additional data collection.

- you landed at point 10 or point 19 on the <u>District Decision Tree</u>.

Module 4 overview

Purpose:

This module can be used as a stand-alone module or as a complementary step for districts that have completed modules 1–3.

This module will guide you in the following steps:

- Evaluating considerations for qualitative and survey data collection methods.
- Developing a plan for collecting new data.

Resources to use in this module:

- District Decision Tree.
- Planning for Action Workbook.
  - ✓ Worksheet 2A (if you completed modules 1–3).
  - ✓ Worksheet 2D (begin here if you did not complete modules 1–3).

Qualitative data collection activities

- New data collection activities might include student, family, or staff
  - Surveys
  - Interviews
  - Focus groups
- Although new data collection can require additional resource investment, it can provide a wealth of knowledge.
- Qualitative research can add context to recent findings or provide new information to districts that extant data cannot provide.

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When might qualitative data be useful?

You have research questions that seek to understand experiences.

You have research questions that require needs sensing.

Available data do not allow for further analysis, yet you need information for decisionmaking.

New data collection research questions are most useful when focused on needs assessment or understanding experiences.

Add context to quantitative analyses of COVID-19 learning changes.

For example, why do certain groups of students experience larger or smaller learning changes than the average student?

Provide needed information to districts not available in administrative data.

For example, how did students experience remote instruction in spring 2020?

Provide a fundamental understanding of the needs of district students, families, and staff going into the 2020/21 school year.

For example, how many families are experiencing housing or food insecurities?

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New data collection: Surveys

Surveys of teachers, students, and families

When is this useful?

You already have an idea of what you might find in relation to your research question and need to do a check of your assumptions.

What are some questions that can be answered?

- Do students and parents feel that their remote learning experience was adequate?

- How did teachers perceive moving to remote learning? What was most challenging or most successful?

- Were provisions of technological support sufficient for students to participate in remote learning?

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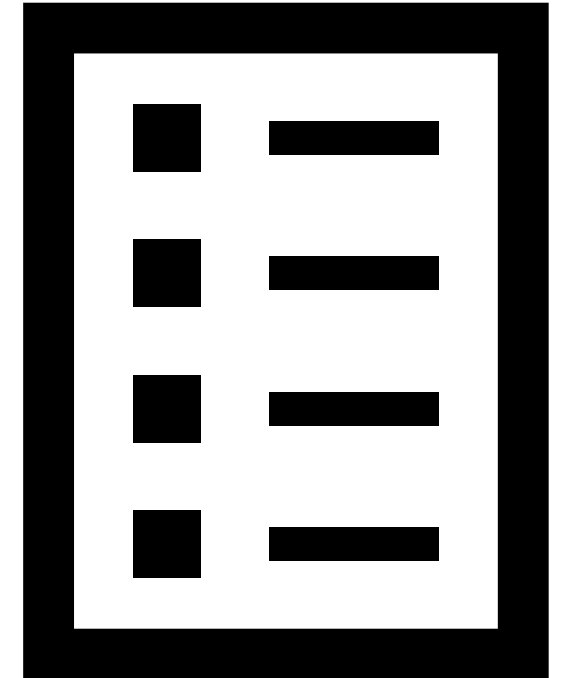
New data collection: Interviews and focus groups

Virtual or in-person focus groups or interviews of teachers, students, and families

When is it useful?

When information is lacking about the topic of interest or a greater depth of understanding is necessary to address your research question(s).

What are some additional questions that can be answered?

- What did families and students experience during COVID-19? What resources did they use, and what resources do they still need?

- What kinds professional development and support do teachers need to feel proficient in remote learning?

- How did school administrators respond to school closures and what kinds of support do they need in the future?

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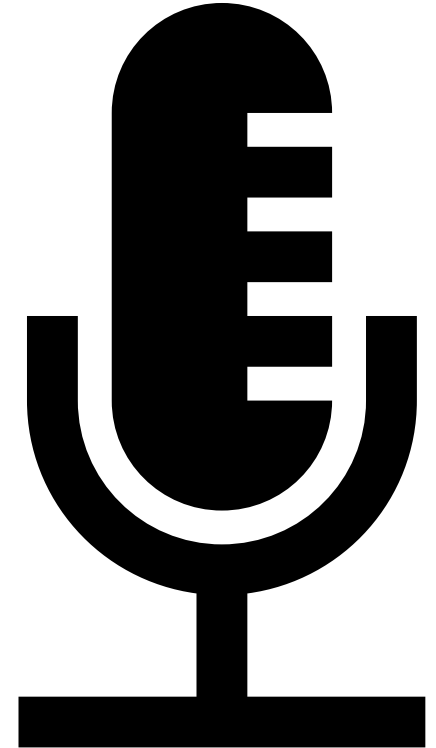
Considerations for your methodological approach

This table outlines some important considerations for data collection and analysis when selecting a methodological approach.

	Surveys		Interviews and focus groups	
	Pros	**Cons**	**Pros**	**Cons**
Data collection	• Easily administered online. • Can be anonymous. • Data collection can be automized.	• Limited in the depth of information gathered. • Questions and response categories are predefined.	• Depth and breadth of information. • Small sample size still produces valuable data.	• Can be time consuming to collect data. • Challenges in the recruitment of subjects.
Data analysis	• Data can be easily analyzed if collected digitally.	• No opportunity for follow-up questions. • Lacks exploratory opportunities.	• Opportunity for probing participant responses. • Opportunity to explore new themes in the data.	• Can be time consuming to code and analyze data. • Cost of transcription.

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Which methodology should we use?

Use Worksheets 2A and 2D in the Planning for Action Workbook to complete the following:

- **Step 1:** Use Worksheet 2A to refine your research questions.

- **Step 2:** Determine which data collection activities fit your research questions and district context.

- **Step 3:** Use Worksheet 2D to outline a plan for executing data collection and analysis.

Worksheet 2D: New data collection planning

Purpose: Use the following worksheet as you progress through Module 4 to complete your analytic framework for new/complementary data collection efforts. Be specific about the data collection methods and the strategies for sampling or reaching populations of interest.

*If your research questions focus on **estimating changes in learning** using extant data sources, **return to Module 1 and the Planning for Analysis Workbook** to complete analyses. Jump to Worksheets B and C in this workbook to complete your plan for action.*

Research questions	Topics of interest	Data collection method(s)	Population(s) of interest	Sampling strategy
Example: How did students experience remote learning during the COVID-19 spring 2020 school building closures?	*Responsiveness of teaching staff, availability of technology, needs for future remote learning*	*Electronic student and family surveys*	*Students who are economically disadvantaged and students with a disability*	*Survey all students in grades 4–8; survey families with children who are economically disadvantaged or have a disability.*

Next steps

- Continue to <u>module 5</u> to develop a dissemination plan and identify needed resources.

▼ **Module 5. Developing additional research questions, dissemination planning, and identifying resources**

Before beginning module 5, be sure you . . .
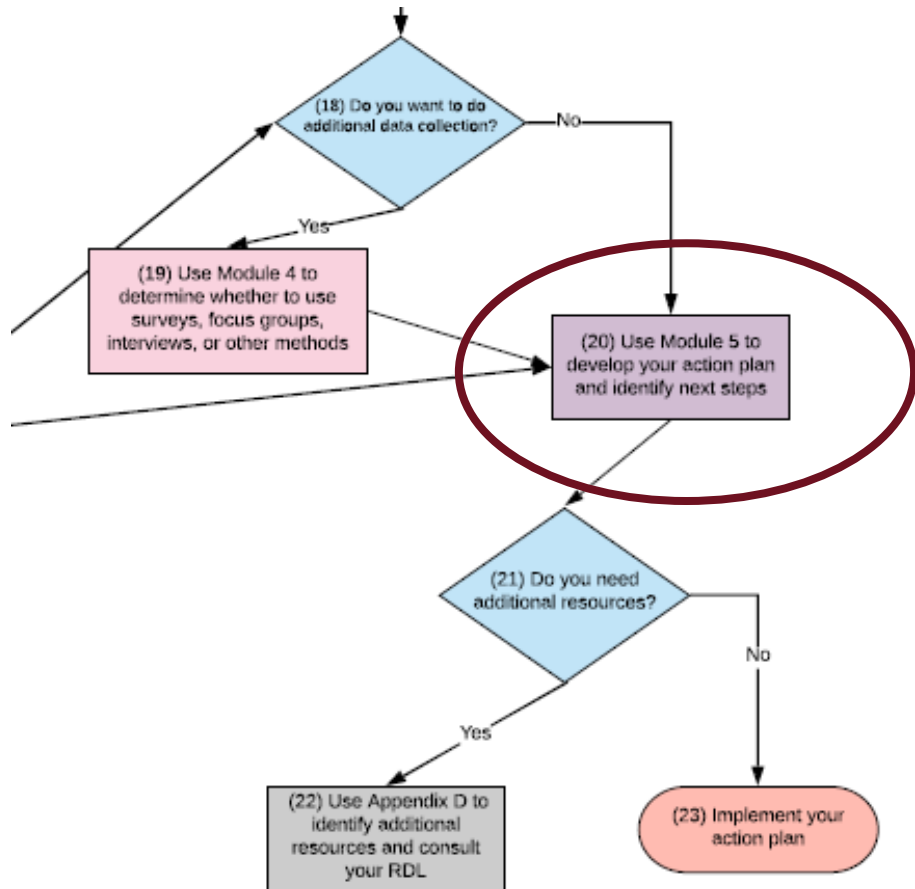
- are ready to share your findings and plan your next steps.
- landed at point 20 on the District Decision Tree.

Module 5 overview

Purpose:

This module will assist you in developing a plan to share findings with appropriate audiences and determine your next steps moving forward.

This module will guide you in the following steps:

- Determining additional analysis or data collection.
- Creating a dissemination plan.
- Identifying needs and needed support.

Resources to use in this module:

- District Decision Making Tree.
- Planning for Action Workbook: Worksheets 2A–2C.

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Identifying next steps in analysis

After completing your first round of analyses,

- review your original research questions and subsequent findings.

- discuss and identify follow-up questions generated from your findings.

- discuss additional data collection activities or analyses of extant data.

- record these new questions and data collection strategies in Worksheet 2A (Example following).

- refer to the District Decision Tree for which module to do next.

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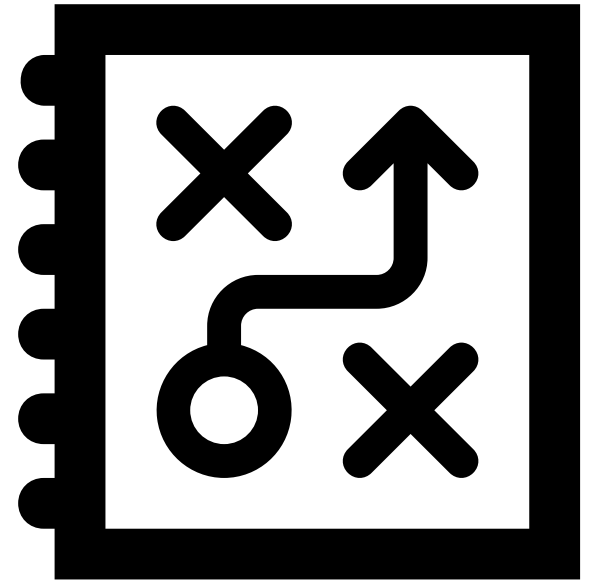
Identifying next steps in analysis (example): Worksheet 2A

First research questions	Findings	Follow-up questions	Potential data collection activities or data sources
1. How has student learning changed post-COVID-19?	• There appears to be significant learning changes for students overall compared with previous years.	• Did students who attended summer school experience a buffering affect?	• Additional analyses using administrative data and summer school attendance records.
2. Do student learning changes vary by student, school, or classroom characteristics?	• Students who are economically disadvantaged appear to have experienced more learning changes than those who are not economically disadvantaged.	• Were students who are economically disadvantaged adequately equipped to participate in remote learning? • Are there additional resources from which families might benefit?	• Family surveys administered via email to all district families.

Disseminating findings

Dissemination considerations

Audience
Goal
Format
Structure/ Language
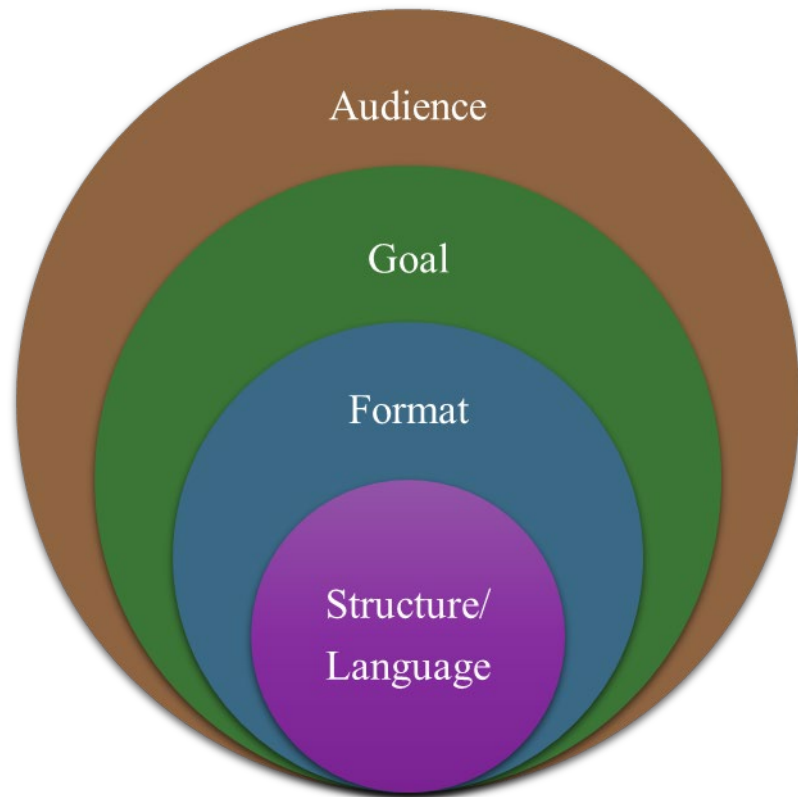
Now that you have findings to share,

- which audience will the findings most impact (*for example, certain departments or public audiences*)?

- who might be able to use this information in decisionmaking processes?

- in what format do these audiences typically consume information (*for example, presentations, memos, or written reports*)?

- is there a time threshold for when these audiences might need this information? If so, is there a need to prioritize dissemination to one group first?

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Disseminating findings: Developing an action plan

Discuss the following questions with your team and record them in your **Planning for Action Worksheet 2B**:

- What stakeholders are most impacted by findings from your analyses?

- How will you communicate findings given the audience?

- Develop a timeline and assign responsibilities for creating materials and delivering findings.

- Note any potential concerns or considerations.

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Identifying needed resources

Discuss the following questions with your team. **Use Worksheet 2C** to record needs and develop a plan for beginning to access potential resources.

1. Given your findings, what needs have you identified to improve learning in the coming school year?

   - Record this under the need description column.

   - Provide the evidence base, specifying the finding that indicates this need in the evidence base column.

2. Discuss all possible resources that you have available to you to help address this need.

3. Discuss any associated tasks with accessing this resource and assign tasks. Record them in the worksheet.

4. Determine a timeline for following up on potential resources.

Contact REL Midwest at relmidwest@air.org

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Education Sciences

Appendix A. District decision tree

```
(1) Start here:
Develop your research
questions.
```

```
(2) Do you want to
assess learning
changes?
```
— No → (4)
— Yes ↓

```
(3) Are you
collecting standardized
assessment data in
2020/21?
```
— No → (4)
— Yes ↓

```
(4) Do you want to
learn about student needs
and experiences?
```
— No → (5)
— Yes ↓

```
(5) Consult your state
or regional education
agencies for resources to
support your research.
```

```
(6) Use Module 1 to
refine your research
questions.
```

```
(7) Have you
refined your research
questions?
```
— No → (6)
— Yes ↓

```
(8) Do you still want
to address learning
changes?
```
— No → (10)
— Yes ↓

```
(9) Continue using
Module 1 to assess your
capacity for data analysis.
```

```
(10) Either revisit your
research questions or use
Module 4 for other data
collection activities.
```

```
(11) Does your
district have the staff
expertise and time to
analyze data?
```
— No →
— Yes ↓

```
(12) Use Module 2 to
assess your data.
```

```
(13) Does
your district's
standardized assessment
meet the criteria for
analysis?
```
— No →
— Yes ↓

```
(14) Continue to use Module
2 to assess other data to
include in your analyses.
```

```
(15) Use Module 3 to
conduct analysis and
interpret findings.
```

```
(16) Did your
analyses lead to additional
research questions?
```
— No →
— Yes ↓

```
(17) Can you
answer these research
questions with your
existing data?
```
— No →
— Yes →

```
(18) Do you want to do
additional data collection?
```
— No → (20)
— Yes ↓

```
(19) Use Module 4 to
determine whether to use
surveys, focus groups,
interviews, or other methods.
```

```
(20) Use Module 5 to
develop your action plan
and identify next steps.
```

```
(21) Do you need
additional resources?
```
— No → (23)
— Yes ↓

```
(22) Use Appendix D to
identify additional
resources and consult
your Regional Data Lead.
```

```
(23) Implement your
action plan.
```

Appendix B. Analytic workplan and framework worksheet

PLANNING FOR ANALYSIS WORKBOOK

About this workbook

The Planning for Analysis Workbook contains four worksheets for use in Modules 1–3 of the *Toolkit to Assess Learning Changes After Spring 2020 COVID-19 Related School Building Closures*. Use the worksheets concurrently with the toolkit slides.

Workbook Contents

- Worksheet 1A: Analytic framework

- Worksheet 1B: Analytic work plan

- Worksheet 1C: Data inventory: Standardized assessments

- Worksheet 1D: Data inventory: Additional data

Worksheet 1A: Analytic framework

Purpose: Use this worksheet as you develop your analytic framework in Modules 1, 2, and 3. Be sure to check the components of your framework against the cautions and assumptions outlined in the toolkit.

Research questions	Standardized assessments		Key factors to consider		Analytic approach and meaningful learning change	
	Outcome(s)	Dataset(s)	Factor(s)	Dataset(s)	Approach	Meaningful change
Example: How has student learning changed post-COVID-19?	*District standardized examinations 1 and 2*	*Student scores on district assessments 1 and 2 from 2015 to 2020*	*Students' economically disadvantaged status*	*Administrative data from district office*	*Means comparison between student groups*	*0.10 standard deviation*

Worksheet 1B: Analytic work plan

Purpose: Use this worksheet as you go through Module 1 to aid in developing a plan for gathering your data, conducting analyses, and developing a timeline for completion.

Use the guiding questions on slide 25 in the toolkit to complete the following planning table.

Process	Associated subtasks	Person(s) responsible	Start date– End date	Notes (*note additional assistance needed to prepare or perform analyses)
Work with vendors and others to pull needed data				
Clean, process, merge, and assess data				
Run analyses				
Summarize and interpret findings				

Worksheet 1C: Data inventory: Standardized assessments

Purpose: Use this worksheet as part of Module 2 (Slides 30–39) to conduct an inventory of your standardized assessment data. **Complete the inventory of standardized assessment data BEFORE moving on to Worksheet 1D.** You cannot conduct these analyses without standardized assessment data. If you do not have standardized assessment data that you can use for this analysis, please return to the District Decision Tree to identify your next steps. See slide 38 for examples of routine data validation checks.

Standardized assessment	Data source	Time frame available	Will you administer in 2020/21?	Quality and completeness concerns	Access concerns	Other notes	Validation check?
Example: Northwest Evaluation Association Measures of Academic Progress Reading Fluency	*Student testing records*	*Available since 2010; administered each fall, winter, and spring*	*Yes; will administer in fall 2020*	*No concerns before fall 2020. Concern that we may not be able to administer the test to all students in fall 2020.*	*None*	*Administered to K–5*	☒
							☐
							☐
							☐
							☐

Worksheet 1D: Data inventory: Additional data

Purpose: Use this worksheet as part of Module 2 to complete the data inventory, focusing on additional data to potentially include in your analyses. See slide 36 for examples of routine data validation checks. List available data sources, along with items they contain, and flag any concerns or considerations.

Data source	Items to use	Time frame available	Quality and completeness concerns	Access concerns	Other notes	Validation check?
Example: Student administrative records	*Economically disadvantaged, race/ethnicity, English learner*	*Available since 2000; third week in September each year*	*Records missing for students who enroll after the third week in September*	*None*	*Mary will reach out to Erin to secure data by 10/1*	☒
						☐
						☐
						☐
						☐
						☐
						☐
						☐

Appendix C. Action planning worksheet

PLANNING FOR ACTION WORKBOOK

About this workbook

The Planning for Action Workbook contains three worksheets for use in Modules 4 and 5 of the *Toolkit to Assess Learning Changes After Spring 2020 COVID-19 Related School Building Closures*. Use this workbook concurrently with the toolkit slides.

Workbook Contents

- Worksheet 2A: Defining new research questions

- Worksheet 2B: Dissemination plan

- Worksheet 2C: Needed resources

- Worksheet 2D: New data collection planning

Worksheet 2A: Defining new research questions

Purpose: Use this worksheet to connect your previous research questions and associated findings with additional questions and data collection activities. If you can answer your research questions with existing data (Example 1), use Module 1 and the Planning for Analysis Workbook. If your research questions require new data collection (Example 2), proceed to Worksheet 2D in this manual.

First research questions	Findings	Follow-up questions	Potential data collection activities or data sources
Example 1: How has student learning changed post-COVID-19?	*There appears to be significant learning loss for students overall compared with previous years.*	*Did students who attended summer school experience a buffering effect?*	*Conduct additional analyses using administrative data and summer school attendance records.*
Example 2: Do student learning changes vary by student, school, or classroom characteristics?	*Students who are economically disadvantaged appear to have experienced more learning loss than those who are not economically disadvantaged.*	*Were students who are economically disadvantaged adequately equipped to participate in remote learning? Are there additional resources from which families might benefit?*	*Administer family surveys to all district families.*

Worksheet 2B: Dissemination plan

Purpose: Use this worksheet to develop your dissemination plan after you have findings from analyses. The following table will help you determine the audience, mode, and timing for communicating findings. Determine if you need to prioritize certain audiences. Consider how your audiences best "digest" information. Try to create multiple modes of presentation to maximize use.

Finding(s)	Which audiences will be interested in or need these data?	What mode(s) of delivery is/are most appropriate for the audience?	When will this audience need information?	Who is responsible for creating materials?	When and how will you deliver findings?	Notes
Example: Most students did not have adequate access to technology in spring 2020.	*School leadership teams, information technology (IT) department*	*A three-page executive summary with graphs (IT); PowerPoint presentation (leadership teams)*	*October 1, 2020*	*Renee and Juan*	*Email to IT; presentation to leadership teams (invite IT)*	**Need to check on best dates for presentation (Juan)*

Worksheet 2C: Needed resources

Purpose: Use the following worksheet to list additional resources needed that you identified from your findings and create an action plan; reference Appendix D for currently available resources through the Ohio Department of Education.

Need description	Evidence base	Possible resources	Associated tasks	Who responsible	Target timeline
Example: Professional development for English learner teachers in remote learning strategies	*Interviews with English learner teachers*	*State department of education, Regional Educational Laboratory (REL) Midwest*	*Reach out to state liaisons and REL Midwest contact*	*State liaisons: Devin REL Midwest: Sharee*	*September 30 for responses to share with the leadership team*

Worksheet 2D: New data collection planning

Purpose: Use the following worksheet as you progress through Module 4 to complete your analytic framework for new/complementary data collection efforts. Be specific about the data collection methods and the strategies for sampling or reaching populations of interest.

> *If your research questions focus on **estimating changes in learning** using extant data sources, **return to Module 1 and the Planning for Analysis Workbook** to complete analyses. Jump to Worksheets B and C in this workbook to complete your plan for action.

Research questions	Topics of interest	Data collection method(s)	Population(s) of interest	Sampling strategy
Example: How did students experience remote learning during the COVID-19 spring 2020 school building closures?	*Responsiveness of teaching staff, availability of technology, needs for future remote learning*	*Electronic student and family surveys*	*Students who are economically disadvantaged and students with a disability*	*Survey all students in grades 4–8; survey families with children who are economically disadvantaged or have a disability.*

Appendix D. Institute of Education Sciences Resources

Appendix D. Institute of Education Sciences Resources

- Institute of Education Sciences

- Regional Educational Laboratory Midwest

- Regional Educational Laboratories: COVID-19: Evidence Based Resources

Use the citation below to reference this toolkit:

Bradley, D., Burkhauser, S., Goldston, C. (2020). *A Toolkit for Assessing learning changes after spring 2020 COVID-19 school closures.* **Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Midwest.**

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