



Education-to-Workforce Indicator Framework

Using Data to Promote Equity and
Economic Security for All

EXECUTIVE SUMMARY

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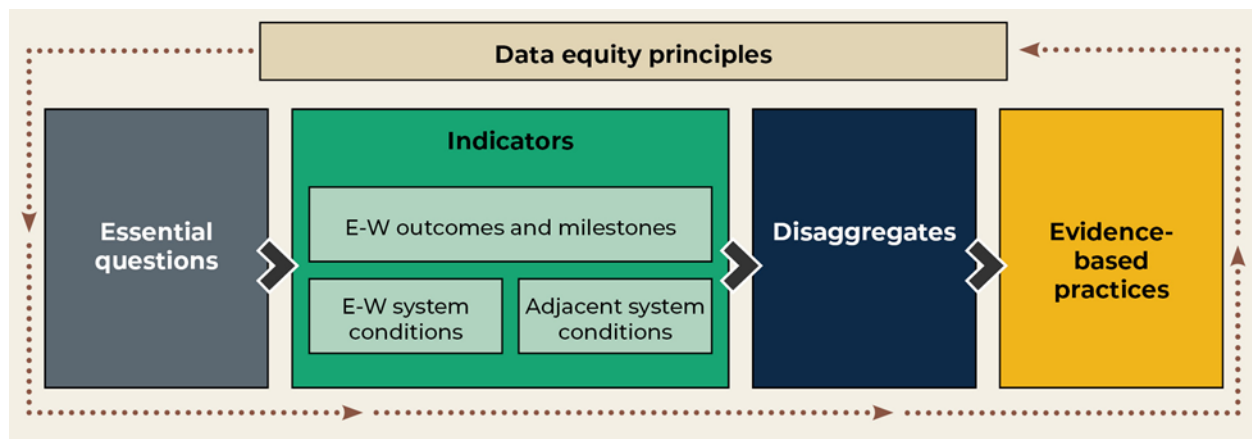
The COVID-19 pandemic exacerbated pre-existing inequities that had already persisted for far too long, disproportionately impacting the academic progress, economic success, and overall well-being of communities of color and those experiencing poverty. Although much is still to be learned about the impacts of the pandemic, we know that a return to the status quo will not be sufficient to effectively assess and address deep-seated inequities. Education, workforce, and adjacent systems will need to collaborate to develop responses grounded in equity and evidence.

A key component of successful systems change is a data infrastructure that can help partners across sectors continuously learn, adapt, and improve. However, decision makers do not always have access to the data they need to answer the critical questions necessary to assess and address disparities along the pre-K-to-workforce continuum. For example, currently only 18 states have a longitudinal data system that connects data from the early learning, K–12, postsecondary, and workforce sectors.

The [Bill & Melinda Gates Foundation](#) seeks to drive meaningful improvement in pre-K-to-workforce data systems through the Education-to-Workforce Indicator Framework (E-W Framework). In April 2021, the Bill & Melinda Gates Foundation engaged [Mathematica](#) and its data equity partner, [Mirror Group](#), to lead the development of the E-W Framework, with input from experts connected to E-W research, policy, and practice at the local, state, and federal levels. Based on reviews of leading frameworks and research, together with significant input from these key partners, the E-W Framework offers holistic guidance for translating data into action through several key components (Exhibit ES.1):

- **Data equity principles:** Principles to support ethical and safe data use across the data life cycle
- **Essential questions:** Questions every E-W data system should be equipped to answer
- **Indicators:** Indicators that matter most along the E-W continuum for states and localities to measure
- **Disaggregates:** Key student characteristics to inform data disaggregation and assess disparities
- **Evidence-based practices:** Illustrative practices shown to move the needle on key outcomes

Exhibit ES.1. Components of the E-W Framework



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Together, the framework's components are intended to encourage greater cross-sector collaboration and alignment across local, state, and national data systems, and promote the use of a common set of metrics to assess and address inequities along the pre-K-to-workforce continuum. Through improved data systems and practices, organizations will be better poised to support individuals least well served by current education and workforce systems in achieving economic mobility and security.

The framework's North Star

Economic mobility and security are achieved when individuals have the income and assets needed to attain and preserve their economic independence; possess power and autonomy over their lives; and feel the respect, dignity, and sense of belonging that come from contributing to one's community. **Equity** is achieved when structural barriers based on race, ethnicity, gender, sexual orientation, zip code, class, disability, and other factors are dismantled so an individual's background and identities no longer predict their outcomes in life.

The E-W Framework is designed for a broad group of policymakers, administrators, community organizations, and researchers who use education and workforce data to diagnose inequities; make evidence-based decisions; and evaluate and monitor the impact of policies, programs, and investments designed to address those inequities. In particular, the framework can help users do the following:

- Identify and track the most consequential indicators to measure along the E-W continuum, including indicators of student outcomes *and* system conditions
- Promote alignment around common definitions and equity practices
- Drive greater consistency in data collection and reporting practices
- Better support individuals least well served by current systems
- Establish processes to use data ethically and safely, thereby promoting access to information while protecting individuals' privacy

For each recommended indicator, the framework presents a detailed synthesis of published research and policy expertise to substantiate its inclusion within the framework, along with recommended metric(s) and a discussion of measurement considerations. The framework also synthesizes guidance on selecting practices shown to improve student outcomes and implementing data equity principles throughout the data life cycle. The essential questions, indicators, disaggregates, evidence-based practices, and data equity principles included in this report were selected because they have the power to inform policy and practice to improve equity in system conditions and individual outcomes from pre-K to workforce, ultimately enabling more individuals to achieve economic mobility and security.

A. How was the framework developed?

We began by convening two advisory groups that helped us develop the framework through regular meetings and review periods:

1. An **external advisory board** of 15 E-W data experts and leaders, including state and district policymakers, researchers, policy advocates, and former educators
2. An **internal working group** of 10 Bill & Melinda Gates Foundation program officers who work with grantees across the country on early learning, K–12, postsecondary, pathways, economic mobility, and data initiatives

External Advisory Board members

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- **Kelia Washington**
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We collaborated with these advisory groups to identify a set of core values and design principles that center equity in guiding development of the framework. For instance, one core value for the framework was to shift from deficit to asset framing. This value translated into a design principle focused on offering definitions of student success that are inclusive of both academic *and* non-academic outcomes valued by priority communities, and that value and reflect multiple pathways to success.

To guide the selection of indicators, we identified and prioritized a set of review criteria with input from the advisory boards to determine whether each indicator met the following criteria:

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- Actionable for addressing inequities
- Predictive of later education or workforce success
- Meaningful to parents, students, educators, and other groups
- Feasible to measure
- Comparable across contexts
- Valid for disaggregation
- Minimizes unintended consequences (for example, unlikely to create perverse incentives)

After defining the framework’s core values, design principles, and indicator review criteria, we reviewed and synthesized existing frameworks, reports, and research. We began by conducting a crosswalk of more than 40 existing frameworks, from which we identified nearly 200 candidate indicators for initial review according to the above criteria. We then presented the findings of our initial review and gathered input from the two advisory groups to further refine the list of indicators, as well as their definitions and recommended metrics. During working sessions with the advisory groups, we solicited targeted feedback on the proposed indicators and facilitated group dialogue to grapple with important questions, tensions, and trade-offs that emerged.

In addition to engaging with the two advisory groups throughout the project, we led a series of input-gathering sessions with staff and partners from five collective impact organizations across the country to learn about how the framework could support their work. Each of these organizations comprises parents, community leaders, and institutional partners working together to promote systems change in their communities. These sessions helped us vet and validate the framework’s design principles and prioritize indicators that community leaders, practitioners, and advocates said were most critical to their work.

B. Essential questions

Every state and locality should be able to ask and answer essential questions about how their students are progressing through their journeys from pre-K into the workforce. An effective and functional data infrastructure can enable analysis of these questions, guide action to address equity disparities, and ensure all students are on a path toward economic mobility and security. However, current gaps in state pre-K-to-workforce data collection, system linkages, and availability can make it difficult to answer critical questions about student outcomes and E-W systems.

To decide which indicators to prioritize for data collection and analysis, states and localities should start with a list of the essential questions that require data to answer. Below, we have compiled 20 questions we see as essential for E-W data systems to answer. Each of these questions can be mapped back to key indicators that appear in the E-W Framework. To ensure these questions lead to meaningful action, data should be disaggregated by race, income, gender, and other characteristics to reveal disparities that may be masked in the aggregate.

20 essential questions for E-W systems

The following essential questions can be answered using indicators from the E-W Framework:

1. Do students and families have access to adequate **public supports** and **neighborhood conditions** to enable them to succeed academically and in the workforce?
2. Are eligible children enrolled in **quality, full-day pre-K programs**?
3. Are children demonstrating **kindergarten readiness** across the five learning domains?
4. Do students have access to **quality, full-day kindergarten**?
5. Are students demonstrating satisfactory **academic progress**, **consistent attendance**, and **positive behavior** to be considered **on track in the early grades**?
6. Do students have **access to quality school environments**, including quality curricula and instruction, experienced teachers, effective leaders, and adequate funding?
7. Are there populations of students that disproportionately experience **exclusionary discipline practices** that disrupt their educational experience?
8. Are students meeting **reading and math benchmarks** in grades 3 and 8?
9. Are teachers and schools making sufficient **contributions to academic growth** for students?
10. Do students attend schools with **safe, inclusive, and supportive environments** that support their **social, emotional, mental, and physical development and well-being**?
11. Are students demonstrating satisfactory **academic progress**, **consistent attendance**, and **positive behavior** to be considered **on track for high school graduation**?
12. Do students have access to and complete rigorous and accelerated **college preparatory coursework**?
13. Are students taking the necessary steps to **apply to college** after high school with sufficient **counseling support**?
14. Are students **graduating from high school** on time and successfully transitioning into **further education, training, or employment**?
15. Are there **quality pathways** for students who pursue career training that lead to employment in **quality jobs**?
16. Are students **matriculating to well-matched postsecondary institutions** that successfully graduate their students with credentials of value?
17. Do students attend postsecondary institutions that provide **adequate financial aid** and are **adequately funded** to offer a quality educational experience?
18. Are students experiencing sufficient **early momentum in postsecondary education** to be on track for on-time completion?
19. Are students **completing credentials of value** after high school that set them up for success in the workforce?
20. Are students gaining access to **quality jobs** that offer **economic mobility and security** after high school or postsecondary training and education?

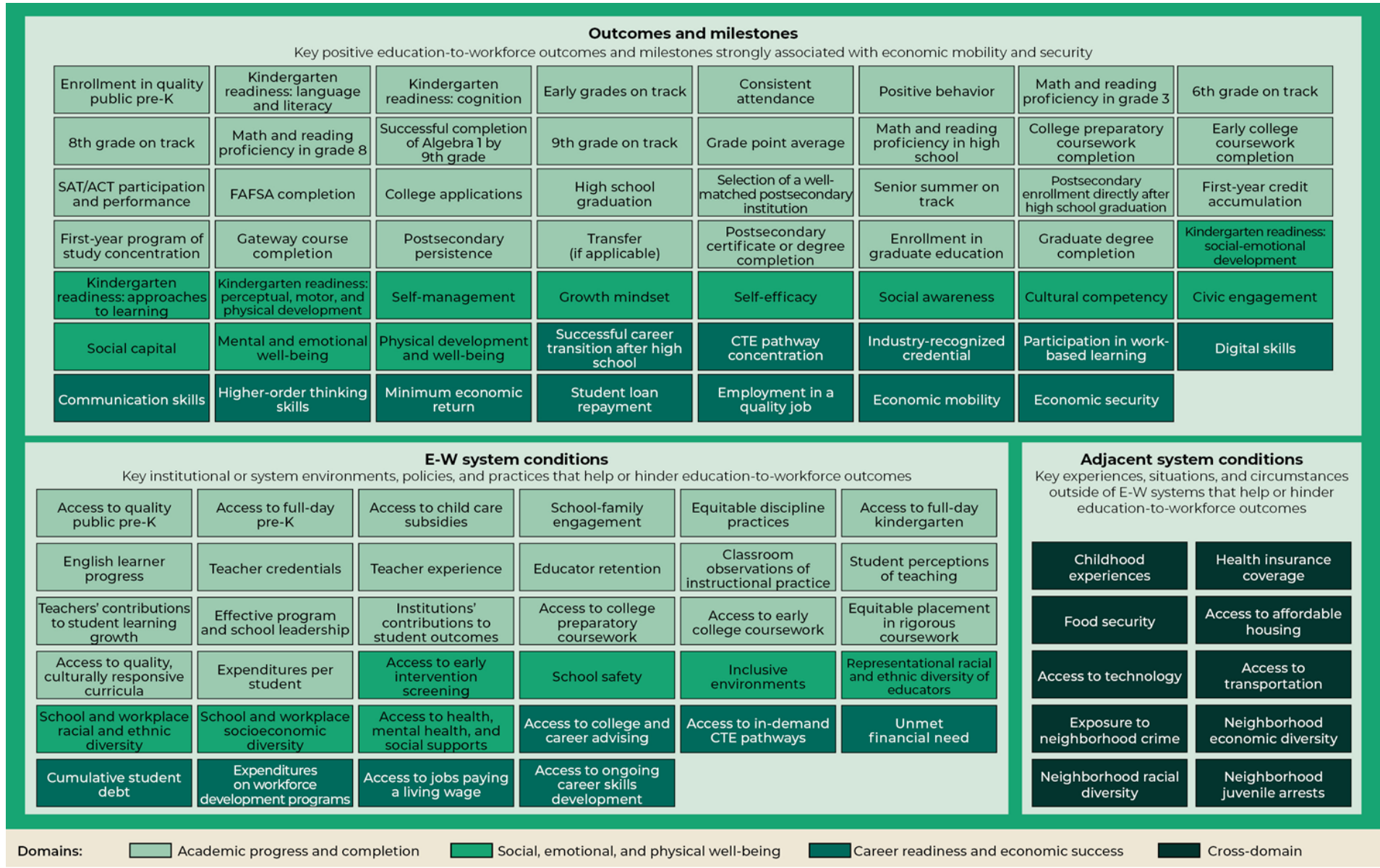
C. Indicators and metrics

The indicators component provides definitions and ways to measure E-W student outcomes and milestones, as well as institutional and system conditions, associated with economic mobility and security. To drive change, E-W data systems must measure how students are performing and progressing toward key outcomes, as well as how underlying conditions may be driving disparities and impeding students' chances for success. Failing to examine both individual and system-level data carries the risk of neglecting the role systems play in shaping the racial and socioeconomic inequities that influence outcomes. For this reason, the E-W Framework includes three types of indicators:

- 1. Outcomes and milestones.** Key outcomes and milestones along the E-W continuum strongly associated with individuals achieving economic mobility and security.
- 2. E-W system conditions.** Key institutional or systemic environments, policies, and practices within E-W systems that support positive E-W outcomes.
- 3. Adjacent system conditions.** Key experiences, situations, and circumstances outside of E-W systems that support positive E-W outcomes.

Within each category, the indicators are organized according to three interrelated domain areas: **academic progress and completion; physical, mental, and social well-being; and career readiness and economic success.** Framework users can adapt their use of indicators based on local policy priorities and top essential questions, but we encourage them to examine all three types of indicators and domains together. The framework describes the evidence base and offers measurement guidance for the 99 indicators selected, as summarized in Exhibit ES.2.

Exhibit ES.2. Indicator overview



D. Disaggregates

The disaggregates component includes key background characteristics that E-W systems should use to disaggregate data and assess disparities, along with guidance on how best to collect the information necessary for disaggregation. By disaggregating data for both outcomes and systems indicators, data users can identify disparities, target solutions, and measure progress toward greater equity. We recommend that E-W systems collect or link data on the 25 disaggregates identified in the framework (Exhibit ES.3).

Exhibit ES.3. Disaggregates

	Pre-K	K-12	Postsecondary	Workforce
Disaggregates	Race and ethnicity			
	Gender			
	LGBT status			
	Disability status			
	Income level			
	Parental education level			
	First-generation college student			
	Student from migrant family household			
	Home language			
	English learner			
	Attendance intensity			
	K-12 school type			
	PS institution classification			
	Transfer enrollment status			
	Credential-seeking status			
	Postsecondary major			
	Occupation category			
	Dislocated worker status			
	Basic skills level			
	Age group (e.g., adult learners)			
	Urbanicity			
	Individuals experiencing homelessness			
	Individual or family military status			
	Individuals with current or past child welfare involvement			
	Justice involvement			

LGBT = lesbian, gay, bisexual, or transgender; PS = postsecondary.

E. Evidence-based practices

The evidence-based practices component includes examples of practices shown to move the needle on key outcomes and E-W system conditions, along with guidance for decision makers on how to select the evidence-based practices most appropriate for their context. In many cases, data point to a need to address inequitable system conditions. However, these system conditions are not the only levers for change—sometimes a new practice, program, policy, product, or intervention can also drive improved outcomes (for example, students who have fallen behind may need individualized support, such as through tutoring or out-of-school programs).

In the evidence-based practices section of the report, we recommend that E-W decision makers follow a four-step process to select practices that meet evidence standards and are relevant to their contexts:

1. Diagnose the need to be addressed by conducting a root cause analysis.

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2. Identify potential evidence-based practices for consideration.
3. Select a practice, weighing the evidence base against the feasibility of implementation.
4. Plan and monitor the implementation and outcomes of the practice.

This guidance is followed by examples of evidence-based practices shown to have moved the needle for priority groups on key E-W outcomes and milestones, and related system conditions. These examples are drawn from leading syntheses of E-W research, supplemented by evidence reviews the Bill & Melinda Gates Foundation has conducted to guide the foundation’s investment areas, as well as recommendations from the External Advisory Board. As a result of this collaborative process, we identified 26 examples of evidence-based practices (Exhibit ES.4). Our intent is to highlight examples of evidence-based interventions as a starting place for E-W decision makers.

Exhibit ES.4. Select evidence-based practices

	Pre-K	K-12	Postsecondary	Workforce
Evidence-based practices	Teacher coaching and professional development	Response to Intervention	Co-requisite support	Employer partnerships with CTE programs
	Skill-based curricula	High-impact tutoring	Comprehensive, integrated advising	Youth workforce development programs
	Social skills training	Out-of-school programs	Mentoring and coaching	Sector-oriented job training programs
	Parent programs	Evidence-based curricula	Financial incentives for students	
		SEL curricula and programs	Digital learning	
		Intensive, individualized support for students off track on early warning indicators	SEL curricula and programs	
		Small, personalized learning communities	Contextualized or integrated basic skills instruction in occupational training	
		Accelerated postsecondary pathways	Intentionally designed career pathway programs	
		Career pathway programs		
		Financial aid advising and hands-on assistance		
	Enhanced college advising			

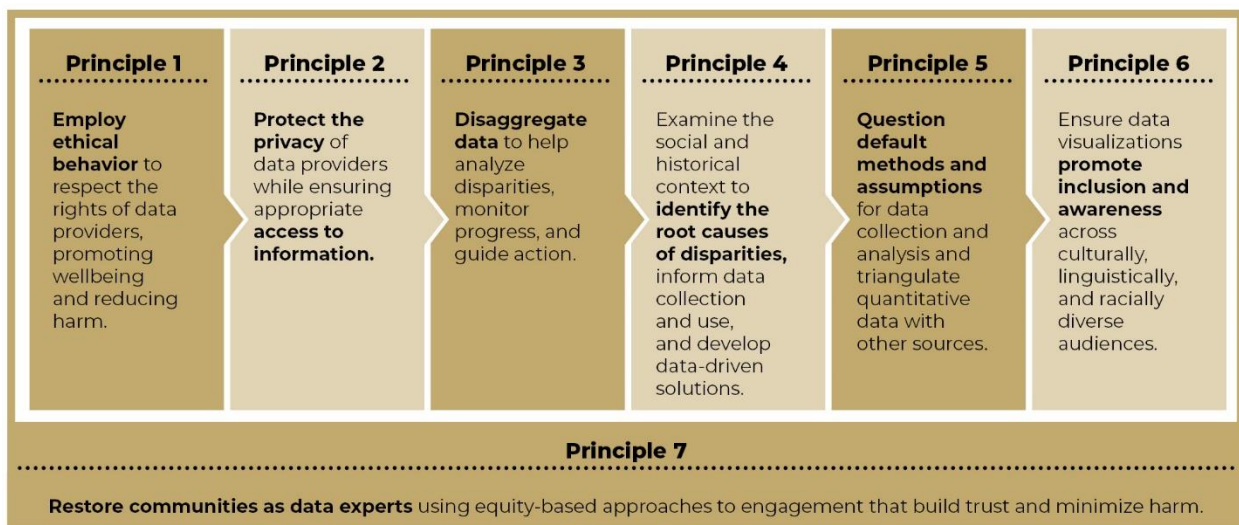
CTE = career and technical education; SEL = social-emotional learning.

F. Data equity principles

At the heart of the framework is a set of principles for centering equity throughout the data life cycle. Data insights can empower practitioners, policymakers, and community members to make better, more informed decisions grounded in evidence, but they can also reinforce deficit narratives, biases, and other long-standing structural inequities when not understood and applied appropriately. Data equity principles offer guidance for data users to ensure data are meaningful, accessible, and actionable for those communities least well served—thereby minimizing the risk of harm while maximizing the potential to promote greater equity through data use. For example, data safeguards must be implemented to ensure that privacy and security considerations are built into the work from the beginning.

The framework includes seven leading data equity principles (Exhibit ES.5) to help E-W systems use data in service of greater equity. The order in which the principles are listed is not indicative of their relative importance—all seven principles must be put into action to achieve data equity. In particular, engaging community members as data experts (Principle 7) is critical to successfully implementing all of the other principles and meeting equity goals.

Exhibit ES.5. Data equity principles



Key terms

Framework context	
Asset framing	Using language that focuses on the strengths, rather than deficits, of individuals or communities. Asset framing is the opposite of deficit framing.
Community	A place, institution, or group that includes individuals with similar characteristics, interests, or experiences (such as a neighborhood, school, or church).
Data	Distinct pieces of information, usually collected, stored, and processed for a specific purpose. They can be either quantitative or qualitative.
Data users	Individuals within organizations who collect and analyze data to inform decisions, including policymakers, administrators, educators, community leaders, and researchers, among others.
Disparities	Documented differences in outcomes between groups.
Economic mobility and security	The conditions that arise when individuals have the income and assets needed to attain and preserve their economic independence; possess power and autonomy over their lives; and feel the respect, dignity, and sense of belonging that come from contributing to one's community.
Equity	Just and fair inclusion in a society in which all can participate, prosper, and reach their full potential. Equity is achieved when structural barriers based on race, ethnicity, gender, sexual orientation, zip code, class, disability, and other factors are dismantled so an individual's background and identities no longer predict their outcomes in life.
Inequities	The conditions that arise when policies, practices, attitudes, or cultural messages make it harder for some individuals—and easier for others—to fully participate, contribute, and take advantage of opportunities and resources based on their identities and background traits. Inequities are apparent when identities or background traits such as race, ethnicity, gender, sexual orientation, zip code, class, or disability statistically predict outcomes.
Priority communities	In the context of the E-W Indicator Framework, priority communities are identified as Black, Indigenous, and other communities of color, and communities experiencing poverty. Priority communities may differ depending on the context and locale in which the framework is used.
Proximate leaders	Community advocates who share similar values and experiences of others within their communities and are respected by community members as leaders and representatives.
Source frameworks	Indicator frameworks from leading organizations used to identify candidate indicators for inclusion in the E-W Framework.
Framework components	
Data equity principles	Practices for centering equity in the collection, analysis, reporting, and application of E-W data.
Disaggregates	Key characteristics that E-W systems should use to disaggregate outcomes and system conditions to assess and address inequities.
Evidence-based practices	Practices that have been shown to move the needle on key E-W outcomes based on multiple high-quality causal studies consistently demonstrating positive impacts for a diverse population of individuals—particularly priority communities.
Indicators	The information data systems should measure along the pre-K-to-workforce continuum to assess inequities and track progress in key outcomes and conditions.

Indicator types	
Adjacent system conditions	Key experiences, situations, and circumstances outside of E-W systems that help or hinder positive E-W outcomes.
E-W system conditions	Key institutional or systemic environments, policies, and practices that help or hinder an individual's ability to achieve positive E-W outcomes.
Outcomes and milestones	Key outcomes and milestones along the E-W continuum strongly related to achieving economic mobility and security.

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