

Education-to-Workforce Indicator Framework Appendices

Framework excerpt

This file contains the appendices of the Education-to-Workforce Indicator Framework, which include: the list of source frameworks we reviewed, a mapping of indicators to source frameworks, the review criteria we used to assess and select indicators, the data equity literature we reviewed, a mapping of indicators to evidence-based practices, and a mapping of essential questions to indicators. The full framework includes five chapters:

- I. Introduction and approach
- II. Indicators and metrics
- III. Disaggregates
- IV. Evidence-based practices
- V. Data equity principles

Appendix A. Source frameworks

Exhibit A.1. Source frameworks

Framework name	Authoring organization(s)	Pre-K	K-12	Postsecondary	Workforce
P-16 Framework	The Bill & Melinda Gates Foundation	✓	✓	✓	
Pathways Driver Diagram	The Bill & Melinda Gates Foundation	✓	✓	✓	
P-16 Snapshot Indicators	The Bill & Melinda Gates Foundation	✓	✓	✓	
K-12 Student Outcomes & Indicators	The Bill & Melinda Gates Foundation		✓		
K-12 Strategy Measurement Framework for Math Outcomes	The Bill & Melinda Gates Foundation		✓		
Framework for Monitoring Educational Equity	The National Academies (<i>American Educational Research Association, the Atlantic Philanthropies, the Ford Foundation, the Spencer Foundation, the U.S. Department of Education, the William T. Grant Foundation, and the W.K. Kellogg Foundation</i>)	✓	✓	✓	
Building Educational Equity Indicator Systems	The National Academies	✓	✓	✓	
Key National Education Indicators	The National Academies (<i>John D. and Catherine T. MacArthur Foundation, Carnegie Corporation of New York, the Bill & Melinda Gates Foundation, and the Presidents' Fund of the National Research Council</i>)	✓	✓	✓	✓
Monitoring Progress Toward Successful K-12 STEM Education	The National Academies (<i>National Science Foundation</i>)		✓		
Quality in the Undergraduate Experience	The National Academies (<i>The Lumina Foundation</i>)			✓	
Indicators for Monitoring Undergraduate STEM Education	The National Academies (<i>The National Science Foundation</i>)			✓	
State Indicators for Early Childhood	Project THRIVE (<i>The National Center for Children in Poverty at Columbia University</i>)	✓			
Birth to Grade 3 Indicator Framework	The Council of Chief State School Officers & Center on Enhancing Early Learning Outcomes	✓			
Getting Ready: National School Readiness Indicators Initiative	Rhode Island KIDS Count (<i>The David and Lucile Packard Foundation, the Kauffman Foundation, and the Ford Foundation</i>)	✓			
School Quality Measures	MA Consortium for Innovative Education Assessments (<i>University of Massachusetts Lowell</i>)		✓		

Framework name	Authoring organization(s)	Pre-K	K-12	Postsecondary	Workforce
CORE Districts Improvement Measures	CORE Districts Data Collaborative		✓		
Framework for Great Schools	New York City Department of Education		✓		
Building for Equity School Self-Assessment Tool	Center for Collaborative Education		✓		
Robust and Equitable Measures to Identify Quality Schools	The Urban Institute (<i>Jobs for the Future, the Barr Foundation</i>)		✓	✓	✓
From Tails to Heads: Building Momentum for Postsecondary Success	The Education Strategy Group (<i>Level Up</i>)		✓	✓	
Academic Key Performance Indicators	Council of the Great City Schools	✓	✓		
Framework for Measuring Career Pathway Innovation	The Center for Postsecondary and Economic Success (CLASP)			✓	✓
Great Public Schools Indicators Framework	The National Education Association	✓	✓		
Regional Cradle to Career Education & Workforce Partnership	The Gateways Partnership (<i>California State University, East Bay</i>)		✓	✓	✓
Partnering for Student Success—The Cradle to Career Framework	Portland State University (<i>Leaders Roundtable</i>)	✓	✓	✓	✓
Cradle to Career Data Point Definitions	WestEd	✓	✓	✓	✓
Dimensions of Equity	Alliance for Resource Equity (<i>Education Resource Strategies and the Education Trust</i>)	✓	✓		
Framework for Evaluating Impacts of Broadening Participation Projects	The National Science Foundation		✓	✓	✓
Self-Assessment Rubric for the Institutionalization of Diversity, Equity, and Inclusion in Higher Education	New England Resource Center for Higher Education (<i>University of Massachusetts Boston</i>)			✓	
Postsecondary Metrics Framework	Institute for Higher Education Policy (<i>The Bill & Melinda Gates Foundation</i>)			✓	
Higher Education in Prison Key Performance Indicator Framework	The Institute for Higher Education Policy			✓	✓
Postsecondary Data Partnership	The National Student Clearinghouse			✓	

Framework name	Authoring organization(s)	Pre-K	K-12	Postsecondary	Workforce
Equitable Value Framework	The Postsecondary Value Commission			✓	✓
The United Way Equity Framework	United Way	✓	✓	✓	✓
Job Design Framework	National Fund for Workforce Solutions				✓
WIOA Performance Indicators and Measures	U.S. Department of Labor				✓
Education and Economic Opportunity Indicators	California Race Counts	✓	✓	✓	✓
Guide to Racial and Ethnic Equity Systems Indicators	StriveTogether	✓	✓	✓	✓
Boosting Upward Mobility: Metrics to Inform Local Action	The Urban Institute (<i>The Bill & Melinda Gates Foundation</i>)	✓	✓		✓
Inclusive Economies Indicators	The Rockefeller Foundation (<i>Everett Program, USC Dornsife Program for Environmental and Regional Equity</i>)	✓	✓	✓	✓
National Equity Atlas Indicators	PolicyLink and University of Southern California Equity Research Institute	✓	✓	✓	✓

Appendix B. Crosswalk to source frameworks

Exhibit B.1. Crosswalk to source frameworks

	Indicator	P-16 Framework	Pathways Driver Diagram	P-16 Snapshot Indicators	K-12 Student Outcomes & Indicators	K-12 Strategy Measurement Framework for Math Outcomes	Framework for Monitoring Educational Equity	Building Educational Equity Indicator Systems	Key National Education Indicators	Monitoring Progress Toward Successful K-12 STEM Education	Quality in the Undergraduate Experience	Indicators for Monitoring Undergraduate STEM Education	State Indicators for Early Childhood	Birth to Grade 3 Indicator Framework	Getting Ready: National School Readiness Indicators Initiative	School Quality Measures	CORE Districts Improvement Measures	Framework for Great Schools	Building for Equity School Self-Assessment Tool	Robust and Equitable Measures to Identify Quality Schools	From Tails to Heads: Building Momentum for Postsecondary Success	Academic Key Performance Indicators	Framework for Measuring Career Pathway Innovation	Great Public Schools Indicators Framework	Regional Cradle to Career Education & Workforce Partnership	Partnering for Student Success—The Cradle to Career Framework	Cradle to Career Data Point Definitions	Dimensions of Equity	Framework for Evaluating Impacts of Broadening Participation Projects	Self-Assessment Rubric for Diversity, Equity, and Inclusion in Higher Education	Postsecondary Metrics Framework	Higher Education in Prison Key Performance Indicator Framework	Postsecondary Data Partnership	Equitable Value Framework	The United Way Equity Framework	Job Design Framework	WIOA Performance Indicators and Measures	Education and Economic Opportunity Indicators	Guide to Racial and Ethnic Equity Systems Indicators	Boosting Upward Mobility: Metrics to Inform Local Action	Inclusive Economies Indicators	National Equity Atlas indicators									
Outcomes and Milestones	Enrollment in quality public pre-K	X		X			X	X	X				X		X						X	X			X	X																	X								
	Kindergarten readiness: language and literacy	X		X			X	X	X			X	X	X									X			X																									
	Kindergarten readiness: cognition	X		X			X	X	X			X	X	X									X			X																									
	Early grades on track					X								X		X										X																									
	Consistent attendance	X		X	X		X	X	X					X				X		X	X	X	X	X	X	X	X																								
	Positive behavior	X		X	X									X				X		X	X	X	X	X	X	X																									
	Math and reading proficiency in grade 3	X		X		X	X	X	X				X		X	X	X	X				X	X	X	X	X	X																								
	6th grade on track				X																																														
	8th grade on track				X													X																																	
	Math and reading proficiency in grade 8	X		X	X	X	X		X								X	X				X				X	X																								
	Successful completion of Algebra I by 9th grade					X															X	X		X			X																								
	9th grade on track				X																	X																													
	Grade point average	X			X	X	X														X	X		X	X			X																							
	Math and reading proficiency in high school	X			X		X											X									X	X																							
	College preparatory coursework completion	X																				X		X																											
	Early college coursework completion	X	X		X		X	X													X	X	X	X			X																								
	SAT and ACT participation and performance			X	X	X															X			X	X		X																								
	FAFSA completion	X	X	X	X																	X																													
	College applications		X		X																	X																													
	High school graduation			X			X	X	X								X	X			X	X	X	X	X	X	X	X																							
	Selection of a well-matched postsecondary institution			X		X															X	X																													
	Senior summer on track				X																	X																													
	Postsecondary enrollment directly after high school graduation	X	X	X	X		X	X	X								X				X	X		X		X	X	X																							
	First-year credit accumulation	X			X																							X																							
	First-year program of study concentration	X	X		X																																														
	Gateway course completion	X	X		X				X				X									X						X																							
	Postsecondary persistence		X	X					X				X				X									X	X	X																							
	Transfer (if applicable)	X							X				X								X					X	X	X																							
	Postsecondary certificate or degree completion		X	X					X				X				X				X			X	X	X	X	X	X																						
	Enrollment in graduate education																											X																							
	Graduate degree completion											X																X																							
	Kindergarten readiness: social-emotional development	X								X			X	X	X									X			X																								

Indicator	P-16 Framework	Pathways Driver Diagram	P-16 Snapshot Indicators	K-12 Student Outcomes & Indicators	K-12 Strategy Measurement Framework for Math Outcomes	Framework for Monitoring Educational Equity	Building Educational Equity Indicator Systems	Key National Education Indicators	Monitoring Progress Toward Successful K-12 STEM Education	Quality in the Undergraduate Experience	Indicators for Monitoring Undergraduate STEM Education	State Indicators for Early Childhood	Birth to Grade 3 Indicator Framework	Getting Ready: National School Readiness Indicators Initiative	School Quality Measures	CORE Districts Improvement Measures	Framework for Great Schools	Building for Equity School Assessment Tool	Robust and Equitable Measures to Identify Quality Schools	From Tails to Heads: Building Momentum for Postsecondary Success	Academic Key Performance Indicators	Framework for Measuring Career Pathway Innovation	Great Public Schools Indicators Framework	Regional Cradle to Career Education & Workforce Partnership	Partnering for Student Success: The Cradle to Career Framework	Cradle to Career Data Point Definitions	Dimensions of Equity	Framework for Evaluating Impacts of Broadening Participation Projects	Self-Assessment Rubric for Diversity, Equity, and Inclusion in Higher Education	Postsecondary Metrics Framework	Higher Education in Prison Key Performance Indicator Framework	Postsecondary Data Partnership	Equitable Value Framework	The United Way Equity Framework	Job Design Framework	WIOA Performance Indicators and Measures	Education and Economic Opportunity Indicators	Guide to Racial and Ethnic Equity Systems Indicators	Boosting Upward Mobility: Metrics to Inform Local Action	Inclusive Economies Indicators	National Equity Atlas Indicators													
	Outcomes and Milestones																																																					
Kindergarten readiness: approaches to learning						X	X	X				X		X								X			X																													
Kindergarten readiness: perceptual, motor, and physical development												X	X	X								X			X																													
Self-management	X												X			X																			X																			
Growth mindset	X															X																																						
Self-efficacy								X								X																		X		X																		
Social awareness								X					X			X																	X																					
Cultural competency								X							X																		X																					
Civic engagement								X							X							X	X										X					X	X	X	X	X												
Social capital								X																										X									X											
Mental and emotional well-being															X																			X									X											
Physical development and well-being													X	X					X															X					X	X	X													
Successful career transition after high school						X	X	X							X				X	X		X		X																														
CTE pathway concentration		X																	X	X		X				X																												
Industry-recognized credential								X																															X															
Participation in work-based learning		X						X														X																																
Digital skills	X																		X																																			
Communication skills																			X																																			
Higher-order thinking skills								X				X		X					X																																			
Minimum economic return																																																						
Student loan repayment																																																						
Employment in a quality job	X	X						X		X									X						X																													
Economic mobility																																																						
Economic security																																																						
E-W System Conditions																																																						
Access to quality public pre-K	X					X	X	X				X	X									X	X	X	X	X	X																											
Access to full day pre-K	X							X																			X																											
Access to child care subsidies												X		X																																								
School-family engagement								X					X	X	X	X		X	X				X	X		X																												
Equitable discipline practices	X					X	X									X										X																												
Access to full-day kindergarten													X													X																												
English learner progress	X															X										X																												
Teacher credentials						X	X	X				X	X	X	X							X	X																															
Teacher experience						X	X																																															
Educator retention																																																						
Classroom observations of instructional practice								X					X		X		X	X								X																												
Student perceptions of teaching	X					X	X						X		X	X																																						

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E-W System Conditions	Teachers' contributions to student learning growth																																																
	Effective program and school leadership															X		X	X	X			X					X																					
	Institutions' contributions to student outcomes										X					X																												X					
	Access to college preparatory coursework	X																	X				X																										
	Access to early college coursework	X					X	X											X	X				X																									
	Equitable placement in rigorous coursework					X																		X																									
	Access to quality, culturally responsive curricula									X					X		X			X	X			X					X																X				
	Expenditures per student								X					X							X			X																				X					
	Access to early intervention screening												X											X																									
	School safety						X	X	X					X			X	X					X					X																					
	Inclusive environments	X										X					X	X	X	X				X																				X	X				
	Representational racial and ethnic diversity of educators					X	X	X				X								X									X															X					
	School and workplace racial and ethnic diversity						X	X				X																X																					
	School and workplace socioeconomic diversity						X	X																				X																X			X		
	Access to health, mental health, and social supports						X	X	X				X							X	X			X				X																X					
	Access to college and career advising	X					X															X						X																					
	Access to in-demand CTE pathways		X																		X		X																										
	Unmet financial need	X							X																			X															X						
	Cumulative student debt																											X																					
	Expenditures on workforce development programs																																																
Access to jobs paying a living wage																											X																	X	X	X		X	
Access to ongoing career skills development								X														X																											
Adjacent System Conditions	Childhood experiences					X		X				X		X																														X					
	Health insurance coverage											X		X										X																									
	Food security																																											X	X		X		
	Access to affordable housing																																											X	X	X		X	
	Access to technology	X							X																																		X	X		X			
	Access to transportation																																										X	X	X	X			
	Exposure to neighborhood crime						X																																				X	X	X				
	Neighborhood economic diversity						X																																						X	X	X		
	Neighborhood racial diversity						X																																										

Appendix C. Indicator review criteria

Exhibit C.1. Indicator review criteria

Criterion	Definition	Low (1)	Medium (2)	High (3)
Actionable	There is significant potential for improvement in addressing equity gaps, and data for the indicator can be available on a regular, frequent basis—at least annually.	Evidence of limited gaps by either race/ethnicity or socioeconomic status (backed by data) OR data cannot reasonably be collected and reported on at least annually.	Some evidence of equity gaps by race/ethnicity and/or socioeconomic status (all right if little/no data, gaps are likely) AND data can reasonably be collected and reported on at least annually.	Evidence of significant equity gaps by race/ethnicity and/or socioeconomic status (backed by data) AND data can reasonably be collected and reported on at least annually.
Predictive	Theory and/or research suggest a strong association between the indicator and economic mobility and security (or milestones along the way) for priority groups.	No theory or research suggests a strong connection between indicator and North Star (or another milestone strongly associated with North Star).	Theory OR research suggests a strong connection between indicator and North Star (or another milestone strongly associated with North Star).	Theory AND research consistently show a strong connection between indicator and North Star (or another milestone strongly associated with North Star).
Meaningful	The indicator is considered meaningful by priority communities.	The indicator does not appear in any frameworks/resources vetted by community members.	The indicator appears in one or two frameworks/resources vetted by community members.	The indicator appears in three or more frameworks/resources vetted by community members.
Feasible	Data to measure the indicator are widely available or feasible to collect at reasonable cost in relation to the indicator's value for addressing equity gaps.	The cost/burden of collecting data exceeds its value for addressing equity gaps.	Data are not currently collected regularly but could be collected and shared at reasonable cost/burden OR data are currently collected regularly but are not widely available due to structural (data management) or legal (privacy) barriers.	Data are collected regularly and are widely available OR data are collected regularly and <i>could</i> be made widely available without significant structural (data management) or legal (privacy) barriers.
Valid for disaggregation	There is credible evidence about the validity and reliability of data to measure the indicator for priority student groups, allowing for disaggregation.	Data are not collected consistently across different groups OR there likely are concerns about data quality or validity issues for particular groups (if relevant); instruments are not recommended for all populations.	Data are collected consistently across different groups, BUT there are potential concerns about data quality or validity issues for particular groups (if relevant); unclear whether instruments have been validated with diverse populations.	Data are collected consistently across different groups AND there are no concerns about data quality or other issues for particular groups (if relevant); instruments have been validated with diverse populations.

Criterion	Definition	Low (1)	Medium (2)	High (3)
Comparable	Data for the indicator can be measured comparably across time and place.	Data are unlikely to be measured comparably across time and place.	Data can be measured comparably across time, and place BUT are likely to be measured inconsistently across contexts (e.g., states).	Data can be measured comparably across time and place AND can be measured consistently across contexts (e.g., states).
Minimizes unintended consequences	The indicator is difficult to "game" to make a district, school, or other institution appear more equitable and not likely to create perverse incentives.	The indicator is not difficult to game OR likely to create perverse incentives across different uses.	The indicator is difficult to game, BUT could potentially create perverse incentives depending on how it is used (e.g., high-stakes accountability).	The indicator is difficult to game AND is unlikely to create perverse incentives across different uses.

Appendix D. Sources for literature review on data equity

Exhibit D.1. Sources for literature review on data equity

Title	Author(s)	Description	Phase of the data life cycle
Test Scores are Only a Symptom (2021)	Lashawn Richburg-Hayes (William T. Grant Foundation)	Outlines how researchers and data collectors can leverage historical and societal contexts to improve policy recommendations and strengthen findings.	Context Setting, Planning
Equity Principles for Data and Research Investments	Bill & Melinda Gates Foundation	Describes guiding principles for the Bill & Melinda Gates Foundation’s K–12 team to consider when designing, executing, and disseminating findings from research investments.	Context Setting, Planning, Access
7 Steps to Advance and Embed Race Equity and Inclusion within your organization (2014)	Annie E. Casey Foundation	Offers seven steps for foundations and organizations to incorporate equity into their processes, programs, and institutional culture.	Context Setting, Collection, Analysis
How RAND Applies an Equity Lens to Research and Analysis (2021)	Rihanna C. Rogers, Anita Chandra, et al. (RAND)	Describes how RAND seeks to bring an equity research lens to projects examining issues of social justice ranging from mass incarceration to anti-Asian violence.	Context Setting, Collection, Analysis
Measuring the Unmeasurable: Racism by the Numbers (2020)	Paul Thomas	Explores how statistical analysis falls short of fully uncovering racial inequities in America using the example of police brutality.	Context-setting, Analysis
Racial Equity Toolkit: An opportunity to operationalize equity (2016)	Julie Nelson and Lisa Brooks (Government Alliance on Race and Equity)	Offers a set of questions to assess equitable practices in proposals and programmatic implementation.	Planning
A Path to Social License: Guidelines for Trusted Data Use (2017)	Data Futures Partnership	Offers guidelines for government agencies, NGOs, and companies to foster transparent use and collection of personal data.	Planning, Collection
Executive Order on Advancing Racial Equity and Support for Underserved Communities Through the Federal Government (2021)	Biden Administration	Emphasizes the need for all federal agencies to place racial equity at the forefront of funding initiatives, policies, and internal procedures.	Planning, Analysis
Ten Simple Rules for Big Data Research (2017)	Zook, M., Barocas, S., boyd d, Crawford, K, Keller, E., Gangadharan, S.P., et al. (Council for Big Data, Ethics, and Society)	Presents “10 simple rules” to address complex ethical issues when using big data in social science research and how to minimize potential harm.	Planning, Analysis, Reporting
Data Equity Framework (2021)	We All Count	Breaks down data work into seven stages. In each stage, the framework offers practical tools to help make key decisions with equity as the end goal.	Planning, Collection, Analysis, Reporting

Title	Author(s)	Description	Phase of the data life cycle
A Handbook of Data Collection Tools: Companion to “A guide to measuring advocacy and policy”	Jane Reisman, Annie Gienapp, Sarah Stachowiak (Annie E. Casey Foundation)	Provides examples and practicable methods for data collection in program and policy evaluation.	Collection
Why Disaggregating Data by Race is Important for Racial Equity (2020; 2016)	Annie E. Casey Foundation	Summarizes the importance of disaggregating data by race.	Collection, Analysis
Using Data to Advance Racial Equity (2020)	Edutopia	Describes ways educators can embed equity into their collection and analysis of student or classroom data.	Collection, Analysis
Guiding Principles and Values for Digital Civil Society (2015)	GrantCraft	Outlines three guiding ethical principles for digital civil society: consent, privacy, and default openness.	Collection, Access
Four Principles to Guide Civil Society's Use of Digital Data (2019)	Stanford Center on Philanthropy and Civil Society	Discusses four principles of digital data use (permission, privacy, openness, and pluralism) and instructs data users on how to ethically handle digital data.	Collection, Access, Reporting
Moving Toward Equity Data Review Tool (2014)	American Institutes for Research	Offers a tool designed for state education agency staff to identify available and relevant equitable access metrics with the goal of identifying and addressing root causes to equity gaps.	Collection, Analysis, Reporting
Building blocks for advancing racial equity (2021)	Race Matters Institute	Describes five building blocks to advance racial equity in your department, organization, community, or network, including using a structural lens and disaggregating data.	Analysis
Five Principles for Creating Equity by Design (2015)	Center for Urban Education	Provides guidance for higher education institutions to embed racial equity in their institutional policies and goals.	Analysis
6 steps to Equitable Data Analysis (2019)	Andrew Knips (Edutopia)	Provides six steps towards a more equitable and culturally proficient data analysis: research identity, preempt implicit bias, frame and challenge, set intentions, pick the right data, and strategically sort.	Analysis
Policy Equity Assessment (2021)	Diversitydatakids (W.K. Kellogg Foundation and the Robert Wood Johnson Foundation)	Assesses the equitable nature of policies through targeted questions across three stages of policy development: logic, capacity, and research.	Analysis
By the Numbers: Using disaggregated data to inform policies, practices, and decision-making (2016)	Annie E. Casey Foundation	Offers case studies and findings illuminating the importance of disaggregating data in social policy research and advocacy.	Analysis
Four Principles to Make Advanced Data Analytics Work for Children and Families (2020)	Annie E. Casey Foundation	Outlines a set of principles to help data users distinguish between useful, acceptable, and harmful applications of advanced analytics tools in social programs and policy.	Analysis

Title	Author(s)	Description	Phase of the data life cycle
Advancing Better Outcomes for all Children: Reporting Data Using a Racial Equity Lens (2008)	Annie E. Casey Foundation	Describes basic features of data presentation using a racial equity lens, as part of the Race Matters Toolkit	Analysis, Reporting
Applying Racial Equity Awareness in Data Visualization (2020)	Jonathan Schwabish and Alice Feng (Urban Institute)	Examines how data users can bring an equity lens to data visualization, including the intentional choice of titles, colors, icons, and organization of data.	Analysis, Reporting
Communicating Inequities in a way that goes beyond identification (2021)	Jillian McKoy (Boston University School of Public Health)	Summarizes guiding questions, tools, and resources to enable data users to improve how they collect and implement data to eliminate structural racism and promote racial equity, as part of a Racial Equity Data Road Map.	Analysis, Reporting
Principles for Advancing Equitable Data Practice (2020)	Marcus Gaddy and Kassie Scott (Urban Institute)	Describes the Belmont Report's ethical principles and offers examples of practices and resources to integrate the principles throughout the data life cycle with an equity lens.	All phases
A Toolkit for Centering Racial Equity throughout Data Integration (2020)	Hawn Nelson, A., Jenkins, D., Zanti, S., Katz, M., Berkowitz, E., et al. (Actionable Intelligence for Social Policy)	Provides actionable guides and positive practices to center equity in all phases of the data life cycle. Cites case studies exemplifying a racial equity focus in each phase.	All phases
Why Am I Always Being Researched? (2018)	Chicago Beyond	Offers guidance to community organizations, researchers, and funders on how to re-shape seven inequities in research: access, information, validity, ownership, value, accountability and authorship.	All phases
Urban Institute Guide for Racial Equity in the Research Process (2020)	Urban Institute	Describes lessons learned through internal discussions at the Urban Institute on how to better center racial equity in research practices and norms.	All phases
Making Racial Equity Real in Research (2020)	Hana Creger (Greenlining Institute)	Offers a how-to guide for research institutions and funders, researchers, and community partners can practice partnership-based research.	All phases
A framework for centering racial equity throughout the administrative data lifecycle (2020)	Amy Hawn Nelson and Sharon Zanti (University of Pennsylvania)	Presents a framework and site-based examples of "Work in Action" where agencies acknowledged and compensated for harms and bias baked into data and practice.	All phases
Results-based accountability for racial equity (2018)	Erika Vernabei (Equity & Results, LLC)	Examines results-based accountability and how community leaders, partners, and government staff can leverage a community centered, racial equity lens as a foundation for achieving desired accountability measures.	All phases

Appendix E. Indicators related to evidence-based practices

Evidence-based practices are informed and supported by rigorous evidence demonstrating consistent, positive impacts on individual outcomes. These practices may also be related to system conditions—for example, implementing an evidence-based practice may improve a related system condition, or may be enabled by a related system condition already in place. Below (Exhibits E.1-E.4), we have identified examples of relevant Outcomes & Milestones and Education-to-Workforce (E-W) System Conditions indicators that are related to the evidence-based practices highlighted in the E-W Framework. These suggested mappings are illustrative, and do not imply causal relationships. Rather, they are intended to help framework users make connections between indicators and evidence-based practices that may be related in their contexts.

Exhibit E.1. Indicators related to evidence-based early learning practices

	Outcomes & Milestones indicators	E-W System Conditions indicators
Teacher coaching and professional development	<ul style="list-style-type: none"> Kindergarten readiness across five domains: <ol style="list-style-type: none"> 1. Language and literacy 2. Cognition 3. Social-emotional development 4. Approaches to learning 5. Perceptual, motor, and physical development 	<ul style="list-style-type: none"> Access to quality public pre-K Classroom observations of instructional practice
Skill-based curricula	<ul style="list-style-type: none"> Kindergarten readiness across five domains: <ol style="list-style-type: none"> 1. Language and literacy 2. Cognition 3. Social-emotional development 4. Approaches to learning 5. Perceptual, motor, and physical development 	<ul style="list-style-type: none"> Access to quality public pre-K Classroom observations of instructional practice
Social skills training	<ul style="list-style-type: none"> Kindergarten readiness: <ol style="list-style-type: none"> 1. Social-emotional development 2. Approaches to learning 	<ul style="list-style-type: none"> Access to quality public pre-K Classroom observations of instructional practice
Parent programs	<ul style="list-style-type: none"> Kindergarten readiness across five domains: <ol style="list-style-type: none"> 1. Language and literacy 2. Cognition 3. Social-emotional development 4. Approaches to learning 5. Perceptual, motor, and physical development 	<ul style="list-style-type: none"> School-family engagement Access to health, mental health, and social supports

Exhibit E.2. Indicators related to evidence-based K-12 practices

	Outcomes & Milestones indicators	E-W System Conditions indicators
Response to Intervention	<ul style="list-style-type: none"> • Early grades on track • Math and reading proficiency in grade 3 • 6th grade on track • Math and reading proficiency in grade 8 • 9th grade on track • Grade point average • Math and reading proficiency in high school 	<ul style="list-style-type: none"> • Teachers' contributions to student learning growth • Institutions' contributions to student outcomes
High-impact tutoring	<ul style="list-style-type: none"> • Early grades on track • Math and reading proficiency in grade 3 • 6th grade on track • Math and reading proficiency in grade 8 • 9th grade on track • Grade point average • Math and reading proficiency in high school 	<ul style="list-style-type: none"> • Institutions' contributions to student outcomes
Out-of-school programs (such as summer programs)	<ul style="list-style-type: none"> • Early grades on track • Math and reading proficiency in grade 3 • 6th grade on track • Math and reading proficiency in grade 8 • 9th grade on track • Grade point average • Math and reading proficiency in high school 	<ul style="list-style-type: none"> • Institutions' contributions to student outcomes
High-quality curricula	<ul style="list-style-type: none"> • Early grades on track • Math and reading proficiency in grade 3 • 6th grade on track • Math and reading proficiency in grade 8 • 9th grade on track • Math and reading proficiency in high school 	<ul style="list-style-type: none"> • Access to quality, culturally responsive curricula • Classroom observations of instructional practice
SEL curricula and programs (such as growth mindset interventions)	<ul style="list-style-type: none"> • Consistent attendance • Positive behavior • High school graduation • Self-management • Social awareness • Self-efficacy • Growth mindset • Cultural competency • Mental and emotional well-being 	<ul style="list-style-type: none"> • Equitable discipline practices • Access to health, mental health, and social supports

	Outcomes & Milestones indicators	E-W System Conditions indicators
Intensive, individualized support for students off track on Early Warning Indicators	<ul style="list-style-type: none"> • Positive behavior • Consistent attendance • Early grades on track • 6th grade on track • 8th grade on track • 9th grade on track • Grade point average • High school graduation 	<ul style="list-style-type: none"> • Institutions' contributions to student outcomes • Access to health, mental health, and social supports
Small, personalized learning communities	<ul style="list-style-type: none"> • 6th grade on track • 8th grade on track • 9th grade on track • High school graduation 	<ul style="list-style-type: none"> • Inclusive environments
Accelerated postsecondary pathways	<ul style="list-style-type: none"> • Completion of college preparatory coursework • Completion of early college coursework • High school graduation • Selection of a well-matched postsecondary institution • Senior summer on track • Postsecondary enrollment directly after high school graduation • Postsecondary certificate or degree completion 	<ul style="list-style-type: none"> • Access to college preparatory coursework • Access to early college coursework • Access to college and career advising
Career pathways	<ul style="list-style-type: none"> • High school graduation • Minimum economic return • Employment in a quality job • Successful career transition after high school • CTE pathway concentration • Participation in work-based learning 	<ul style="list-style-type: none"> • Access to in-demand CTE pathways • Access to college and career advising
Financial aid advising and hands-on assistance	<ul style="list-style-type: none"> • FAFSA completion • Postsecondary enrollment directly after high school graduation 	<ul style="list-style-type: none"> • Unmet financial need • Cumulative student loan debt
Enhanced college advising	<ul style="list-style-type: none"> • SAT/ACT participation and performance • FAFSA completion • College applications • Selection of a well-matched postsecondary institution • Senior summer on track • Postsecondary enrollment directly after high school graduation 	<ul style="list-style-type: none"> • Access to college and career advising

Exhibit E.3. Indicators related to evidence-based postsecondary practices

	Outcomes & Milestones indicators	E-W System Conditions indicators
Co-requisite support	<ul style="list-style-type: none"> • First-year credit accumulation • Gateway course completion • Postsecondary persistence 	<ul style="list-style-type: none"> • Institutions' contributions to student outcomes

	Outcomes & Milestones indicators	E-W System Conditions indicators
Comprehensive, integrated advising	<ul style="list-style-type: none"> • FAFSA completion • First-year credit accumulation • First-year program of study concentration • Gateway course completion • Postsecondary persistence • Transfer (if applicable) • Postsecondary certificate or degree completion • Mental and emotional well-being • Participation in work-based learning 	<ul style="list-style-type: none"> • Access to college and career advising • Access to health, mental health, and social supports • Expenditures per student
Mentoring and coaching	<ul style="list-style-type: none"> • First-year credit accumulation • First-year program of study concentration • Gateway course completion • Postsecondary persistence • Transfer (if applicable) • Postsecondary certificate or degree completion • Self-management • Growth mindset • Self-efficacy • Social awareness • Social capital • Communication skills • Higher-order thinking skills 	<ul style="list-style-type: none"> • Access to college and career advising • Representational racial and ethnic diversity of educators • Inclusive environments
Financial incentives for students	<ul style="list-style-type: none"> • First-year credit accumulation • First-year program of study concentration • Gateway course completion • Postsecondary persistence • Transfer (if applicable) • Postsecondary certificate or degree completion 	<ul style="list-style-type: none"> • Unmet financial need • Cumulative student loan debt • Expenditures per student
Digital learning	<ul style="list-style-type: none"> • First-year credit accumulation • First-year program of study concentration • Gateway course completion • Postsecondary persistence • Transfer (if applicable) • Postsecondary certificate or degree completion • Digital skills 	<ul style="list-style-type: none"> • Access to quality, culturally responsive curricula • Expenditures per student

	Outcomes & Milestones indicators	E-W System Conditions indicators
SEL curricula and programs (such as self-regulated learning)	<ul style="list-style-type: none"> • First-year credit accumulation • Gateway course completion • Postsecondary persistence • Postsecondary certificate or degree completion • Self-management • Growth mindset • Self-efficacy • Social awareness • Cultural competency • Mental and emotional well-being 	<ul style="list-style-type: none"> • Access to quality, culturally responsive curricula • Access to health, mental health, and social supports
Contextualized or integrated basic skills instruction in occupational training	<ul style="list-style-type: none"> • Successful career transition after high school • CTE pathway concentration • Industry-recognized credential • Participation in work-based learning • Communication skills • Higher-order thinking skills 	<ul style="list-style-type: none"> • Access to in-demand CTE pathways • Expenditures on workforce development programs • Access to ongoing career skills development
Intentionally designed career pathway programs	<ul style="list-style-type: none"> • Postsecondary certificate or degree completion • Successful career transition after high school • CTE pathway concentration • Industry-recognized credential • Participation in work-based learning • Employment in a quality job 	<ul style="list-style-type: none"> • Access to in-demand CTE pathways • Access to college and career advising • Expenditures on workforce development programs Access to ongoing career skills development

Exhibit E.4. Indicators related to evidence-based workforce practices

	Outcomes & Milestones indicators	E-W System Conditions indicators
Employer partnerships with CTE programs	<ul style="list-style-type: none"> • Successful career transition after high school • Industry-recognized credential • Participation in work-based learning • Employment in a quality job 	<ul style="list-style-type: none"> • Expenditures on workforce development programs • Access to ongoing career skills development • Access to jobs paying a living wage
Youth workforce development programs	<ul style="list-style-type: none"> • Successful career transition after high school • Participation in work-based learning • Minimum economic return • Employment in a quality job 	<ul style="list-style-type: none"> • Expenditures on workforce development programs Access to ongoing career skills development • Access to jobs paying a living wage
Sector-oriented job training programs	<ul style="list-style-type: none"> • Successful career transition after high school • Industry-recognized credential • Participation in work-based learning • Minimum economic return • Employment in a quality job 	<ul style="list-style-type: none"> • Expenditures on workforce development programs • Access to ongoing career skills development • Access to jobs paying a living wage

Appendix F. Indicators related to essential questions

As discussed in the introductory chapter of this report, data users should begin with *essential questions* when identifying which indicators to prioritize for data collection and analysis. Below we outline 20 essential questions which can be used as a starting point for conversations around data and equity, alongside select relevant indicators from the E-W framework.

Exhibit F.1. Indicators related to essential questions

Essential questions	Adjacent System Conditions indicators	
1 Do students and families have access to adequate public supports and neighborhood conditions to enable them to succeed academically and in the workforce?	<ul style="list-style-type: none"> • Childhood experiences • Health insurance coverage • Food security • Access to affordable housing • Access to technology • Access to transportation 	<ul style="list-style-type: none"> • Exposure to neighborhood crime • Neighborhood economic diversity • Neighborhood racial diversity • Neighborhood juvenile arrests

Essential questions	Outcomes & Milestones indicators	E-W System Conditions indicators
2 Are eligible children enrolled in quality, full-day pre-K programs?	<ul style="list-style-type: none"> • Enrollment in public pre-K 	<ul style="list-style-type: none"> • Access to quality pre-K • Access to full day pre-K • Access to child care subsidies
3 Are children demonstrating kindergarten readiness across the five learning domains?	<ul style="list-style-type: none"> • Enrollment in public pre-K • Kindergarten readiness across five domains: <ol style="list-style-type: none"> 1. Language and literacy 2. Cognitive ability 3. Social-emotional development 4. Approaches to learning 5. Perceptual, motor, and physical development 	<ul style="list-style-type: none"> • Access to quality pre-K • Access to full day pre-K • Access to child care subsidies • School-family engagement • Teacher experience • Classroom observations of instructional practice
4 Do students have access to quality, full-day kindergarten?	<ul style="list-style-type: none"> • Early grades on track 	<ul style="list-style-type: none"> • Access to full-day kindergarten
5 Are students demonstrating satisfactory academic progress, consistent attendance, and positive behavior to be considered on track in the early grades?	<ul style="list-style-type: none"> • Kindergarten readiness across five domains: <ol style="list-style-type: none"> 1. Language and literacy 2. Cognitive ability 3. Social-emotional development 4. Approaches to learning 5. Perceptual, motor, and physical development • Early grades on track 	<ul style="list-style-type: none"> • Access to full-day kindergarten • Equitable discipline practices • Teacher credentials • Teacher experience • Access to quality, culturally responsive curricula • Classroom observations of instructional practice • Teachers' contributions to student learning growth

Essential questions	Outcomes & Milestones indicators	E-W System Conditions indicators
<p>6 Do students have access to quality school environments including quality curricula and instruction, experienced teachers, effective leaders, and adequate funding?</p>	<ul style="list-style-type: none"> • Early grades on track • 6th grade on track • 9th grade on track • High school graduation 	<ul style="list-style-type: none"> • Teacher credentials • Teacher experience • Classroom observations of instructional practice • Student perceptions of teaching • Teachers' contributions to student learning growth • Effective program and school leadership • Institutions' contributions to student outcomes • Access to quality, culturally responsive curricula • Expenditures per student
<p>7 Are there populations of students that disproportionately experience exclusionary discipline practices that disrupt their educational experience?</p>	<ul style="list-style-type: none"> • Consistent attendance • Positive behavior 	<ul style="list-style-type: none"> • Equitable discipline practices • School safety • Inclusive environments
<p>8 Are students meeting reading and math benchmarks in grades 3 and 8?</p>	<ul style="list-style-type: none"> • Early grades on track • Math and reading proficiency in grade 3 • 6th grade on track • 8th grade on track • Math and reading proficiency in grade 8 	<ul style="list-style-type: none"> • Teacher credentials • Teacher experience • Classroom observations of instructional practice • Teachers' contributions to student learning growth • Effective program and school leadership • institutions' contributions to student outcomes
<p>9 Are teachers and schools making sufficient contributions to academic growth for students?</p>	<ul style="list-style-type: none"> • Early grades on track • Math and reading proficiency in grade 3 • 6th grade on track • 8th grade on track • Math and reading proficiency in grade 8 • 9th grade on track • Grade point average • Math and reading proficiency in high school 	<ul style="list-style-type: none"> • English learner progress • Teachers' contributions to student learning growth • Institutions' contributions to student outcomes

Essential questions	Outcomes & Milestones indicators	E-W System Conditions indicators
<p>10 Do students attend schools with safe, inclusive, and supportive environments that support their social, emotional, mental, and physical development and well-being?</p>	<ul style="list-style-type: none"> • Self-management • Growth mindset • Self-efficacy • Social awareness • Cultural competency • Social capital • Mental and emotional well-being • Physical development and well-being 	<ul style="list-style-type: none"> • School-family engagement • Equitable discipline practices • School safety • Inclusive environments • Representational racial and ethnic diversity of educators • School and workplace racial and ethnic diversity • School and workplace socioeconomic diversity • Access to health, mental health, and social supports
<p>11 Are students demonstrating satisfactory academic progress, consistent attendance, and positive behavior to be considered on track for high school graduation?</p>	<ul style="list-style-type: none"> • Consistent attendance • Positive behavior • 8th grade on track • Math and reading proficiency in grade 8 • 9th grade on-track • Grade point average • Math and reading proficiency in high school 	<ul style="list-style-type: none"> • Equitable discipline practices • Teacher credentials • Teacher experience • Classroom observations of instructional practice • Teachers' contributions to student learning growth • Institutions' contributions to student outcomes • Access to quality, culturally responsive curricula
<p>12 Do students have access to and complete rigorous and accelerated college preparatory coursework?</p>	<ul style="list-style-type: none"> • Successful completion of Algebra I by 9th grade • College preparatory coursework completion • Early college coursework completion • SAT and ACT participation and performance 	<ul style="list-style-type: none"> • Access to college preparatory coursework • Access to early college coursework • Equitable placement in rigorous coursework • Access to quality, culturally responsive curricula • Access to college and career advising
<p>13 Are students taking the necessary steps to apply to college after high school with sufficient counseling support?</p>	<ul style="list-style-type: none"> • SAT and ACT participation and performance • FAFSA completion • College applications • Social capital 	<ul style="list-style-type: none"> • Access to college and career advising
<p>14 Are students graduating from high school on time and successfully transitioning into further education, training, or employment?</p>	<ul style="list-style-type: none"> • High school graduation • Senior summer on track • Postsecondary enrollment directly after high school graduation • Successful career transition after high school • CTE pathway concentration • Participation in work-based learning 	<ul style="list-style-type: none"> • Access to college and career advising • Access to in-demand CTE pathways • Expenditures on workforce development programs • Access to jobs paying a living wage

Essential questions	Outcomes & Milestones indicators	E-W System Conditions indicators
15 Are there quality pathways for students who pursue career training that lead to employment in quality jobs?	<ul style="list-style-type: none"> • CTE pathway concentration • Participation in work-based learning • Transfer (if applicable) 	<ul style="list-style-type: none"> • Access to in-demand CTE pathways • Expenditures on workforce development programs • Access to ongoing career skills development
16 Are students matriculating to well-matched postsecondary institutions that successfully graduate their students with credentials of value?	<ul style="list-style-type: none"> • Selection of a well-matched postsecondary institution • Senior summer on track • Postsecondary enrollment directly after high school graduation • Postsecondary persistence • Postsecondary certificate or degree completion • Minimum economic return 	<ul style="list-style-type: none"> • Institutions' contributions to student outcomes • Access to college and career advising • Unmet financial need • Cumulative student debt
17 Do students attend postsecondary institutions that provide adequate financial aid and that are adequately funded to offer a quality educational experience?	<ul style="list-style-type: none"> • Student loan repayment 	<ul style="list-style-type: none"> • Expenditures per student • Unmet financial need • Cumulative student debt
18 Are students experiencing sufficient early momentum in postsecondary education to be on track for on-time completion?	<ul style="list-style-type: none"> • First-year credit accumulation • Gateway course completion • Postsecondary persistence • Transfer (if applicable) 	<ul style="list-style-type: none"> • Access to college and career advising • Unmet financial need
19 Are students completing credentials of value after high school that set them up for success in the workforce?	<ul style="list-style-type: none"> • Postsecondary certificate or degree completion • Industry-recognized credential • Social awareness • Cultural competency • Civic engagement • Social capital • Digital skills • Communication skills • Higher order thinking skills • Minimum economic return • Student loan repayment 	<ul style="list-style-type: none"> • Institutions' contributions to student outcomes • Cumulative student debt
20 Are students gaining access to quality jobs that offer economic mobility and security after high school or postsecondary training and education?	<ul style="list-style-type: none"> • Employment in a quality job • Economic mobility • Economic security 	<ul style="list-style-type: none"> • Access to jobs paying a living wage • Access to ongoing career skills development