



RE-ENVISIONING DATA PROCESSES FOR EDUCATIONAL EQUITY

July 2021

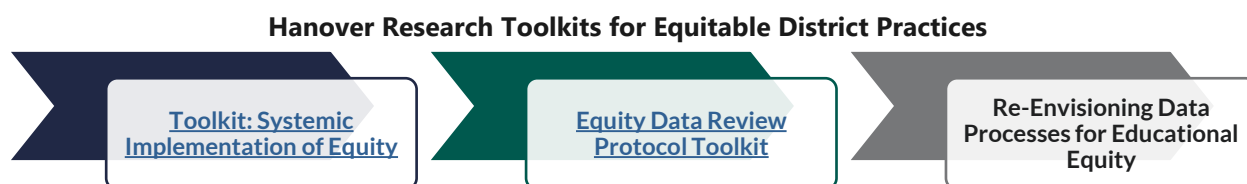


TABLE OF CONTENTS

INTRODUCTION	3
OVERVIEW.....	3
AUDIENCE.....	3
SECTION I: FORM A DATA TEAM	4
Data Team Members.....	4
Data Team Preparation and Readiness	4
SECTION II: GATHER STUDENT DATA	8
Data Identification	8
Data Compilation.....	9
SECTION III: DISCUSS CURRENT GOALS, METRICS, AND DATA	13
Metrics Availability and Selection.....	13
Algorithmic Systems and Statistical Tools	14
SECTION IV: ANALYZE DATA TO IDENTIFY ROOT CAUSES	17
Disaggregation	17
Contextualization and Perspectives.....	17
SECTION V: CREATE A PLAN AND ACT	22
Communication and Visualization	22
Action.....	25
APPENDIX	28
Spotlight Districts.....	28
Resource Guide	29
ENDNOTES	30
ABOUT HANOVER RESEARCH	33

INTRODUCTION

Systemic inequity and biases continue to impact the education sector. Without educational equity, defined as “each child [receiving] what they need to develop to their full academic and social potential,” students may face low expectations, less rigorous coursework and programs, and poor school climates.¹ Addressing inequities in schools requires districts to change policies and practices and stakeholders to recognize and change inequitable beliefs and environments.² Notably, these efforts, both internally and externally facing, must focus on equity to support diversity while accurately conveying data-driven insights.³ To support member districts in these efforts, Hanover Research (Hanover) presents this toolkit, which serves as a practical document for guiding equity-driven district data processes. This toolkit structurally aligns with a previous Hanover report, the Equity Data Review Protocol Toolkit, and provides a complementary and customized resource that focuses on how data teams can overcome bias in data reviews, analyze data equitably, and present findings appropriately. The following figure illustrates how districts can leverage multiple Hanover resources to explore and develop equitable practices and data processes. Additionally, this toolkit concludes with an appendix that includes two spotlight districts and a brief list of resources for further reading.



Source: Hanover Research⁴

OVERVIEW

This toolkit:

- ✓ Presents best practices and approaches for identifying, collecting, analyzing, communicating, and using district data equitably;
- ✓ Explores ways to convey (e.g., through visuals, language) quantitative and qualitative insights with minimal bias;
- ✓ Provides checklists and discussion questions to guide conversations and actions regarding an equitable data protocol; and
- ✓ Links to additional resources that can further develop stakeholders’ understanding of data processes and practices to promote equity.

AUDIENCE

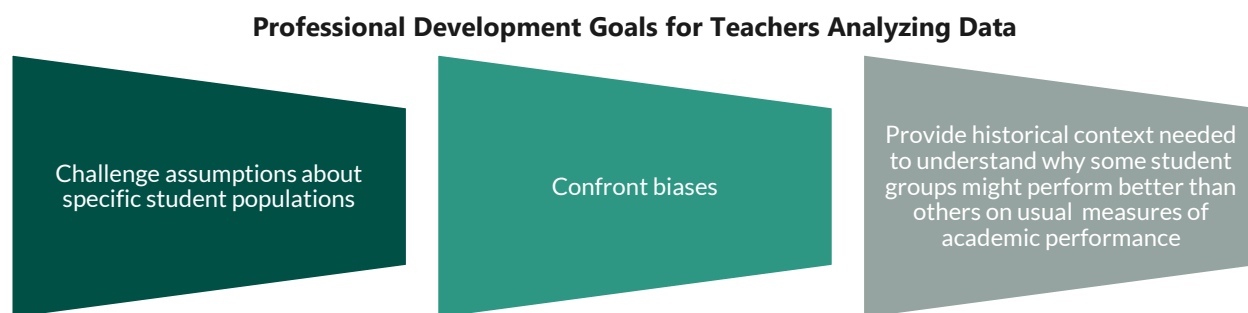
This toolkit presents district leaders and local board of education members with recent best practices and reputable guidance to support data review processes through an equity lens. Notably, this report aligns with the Hanover report, “Equity Data Review Protocol Toolkit.” District leaders and decision-makers should use these reports in tandem to learn about the data review process and explore how to conduct the process equitably and with minimal bias. As such, this toolkit’s structure and five sections correspond with those in the Equity Data Review Protocol Toolkit.

SECTION I: FORM A DATA TEAM

Data Team Members

Data review processes require districts to have a knowledgeable team comprised of diverse voices that will listen to stakeholders and work collaboratively. These teams must include local community members and individuals who identify with groups most represented in datasets while not engaging in “tokenism and performative inclusion.”⁵ To integrate an equity mindset in data team selection, districts may follow the process outlined in the tool *Determining Data Team Members* at the end of this section.

Notably, districts must provide equity-focused professional development and support if teachers or other staff engage in a data-driven research and analysis process. Initial professional development, coaching, or other guidance should serve the three purposes shown in the following figure. Furthermore, school leaders must communicate that data projects aim to improve instruction, not blame certain students or initiate conversations around what students lack (i.e., engaging in deficit-based thinking and language).⁶



Source: Phi Delta Kappan⁷

Data Team Preparation and Readiness

Districts with a data team should establish a strong foundation for equity work before engaging in specific projects. Specifically, teams must hold conversations about their mission, the purpose of data, and the local context (i.e., historical, social, demographic). Teams must also ensure that members feel prepared for their role and understand what practices are and are not appropriate and equitable when working with data.⁸ Guiding questions for this phase of the data review process include:⁹

- Why is this work necessary?
- Who does the work benefit?
- How does it benefit the community at large?
- Who can the process/product harm?

[A 2019 report by Child Trends](#) on racial and ethnic equity in data processes highlights that data team members should follow five guiding principles to ensure they bring an equitable perspective and implement equitable practices.¹⁰ These principles support data processes by ensuring data team members engage in the practices shown in the following figure and expanded on in the report linked above. Although data projects often address different questions and, therefore, may ensure equity in different ways, these principles apply universally, regardless of research topic.¹¹

SECTION I: FORM A DATA TEAM

Five Equity Principles for Data Team Members



Source: *Child Trends*¹²

SECTION I: FORM A DATA TEAM



DETERMINING DATA TEAM MEMBERS

Directions: Use the following process to help identify and select data team members to ensure that the stakeholders involved positively contribute to district goals. The identification and selection process requires districts to consider the composition of a data team and the perspectives and backgrounds it includes. Rather than prioritizing potential members’ titles or levels of education, think about how potential members may bring otherwise underrepresented knowledge and experiences.

1) IDENTIFY STAKEHOLDERS	2) ASSESS STAKEHOLDERS' INTERESTS	3) PRIORITIZE STAKEHOLDERS
<p>Identify potential team members by considering the following categories</p>	<p>Think through why (or why not) and in what ways each group of stakeholders is likely to advance or impede efforts around data sharing</p>	<p>Finalize the group of stakeholders who will be formally engaged by thinking along two dimensions, influence and interest</p>
<p>Core stakeholders, whose engagement is central to data infrastructure:</p> <ul style="list-style-type: none"> ▪ Data owners and contributors (directly contributing or facilitating access) ▪ Funding sources (government, private foundations, other) ▪ Public agency leadership and key elected officials <p>Other direct stakeholders whose engagement can help facilitate (or impede) data sharing success but who are not in the core group:</p> <ul style="list-style-type: none"> ▪ Data users (researchers, advocacy groups) ▪ Technical experts (legal, data technology, security, research methods, fiscal) ▪ Members of communities marginalized by inequitable systems ▪ Advocates for vulnerable populations and communities <p>Other stakeholders who can broaden the interest of data sharing and deepen its constituencies:</p> <ul style="list-style-type: none"> ▪ Business groups ▪ Good government groups ▪ Other citizen and public interest groups 	<p>Consider the possible range of interests—both positive and negative—of each group, such as:</p> <ul style="list-style-type: none"> ▪ Interest in improving service delivery, fostering research, or advancing policy goals ▪ History of exclusion or harm by government or agency officials ▪ Making the case for additional resources or identifying opportunities for savings ▪ Strengthening governmental administration, accountability, or efficiency ▪ Potential of being embarrassed about an inequitable or harmful system ▪ Discomfort or lack of experience with the topic (civic data use or racial equity) ▪ Potential burdens of cooperation ▪ Inertia and organizational culture ▪ Privacy and security ▪ Chart bullet 	<ul style="list-style-type: none"> ▪ Critical (i.e., high interest, high influence): Close engagement, negotiate, enlist supportive allies/champions to help address concerns of resistant stakeholders ▪ Important (i.e., high interest, low influence): Keep Informed, enlist participation in coalitions of supportive groups ▪ Important (i.e., low interest, high influence): Keep informed, keep on board, enlist participation if possible ▪ Important (i.e., low interest, low influence): Keep informed

Source: Actionable Intelligence for Social Policy, University of Pennsylvania¹³

SECTION I: FORM A DATA TEAM



RACIAL EQUITY IN PLANNING PRACTICES

Directions: Consider the following positive and problematic practices and mark the practices that you currently implement. After reviewing all practices, identify strengths and areas of improvement.

POSITIVE PRACTICES		PROBLEMATIC PRACTICES	
<input type="checkbox"/>	Including diverse perspectives (such as community members with lived experiences and agency staff who understand the data) on planning committees	<input type="checkbox"/>	Using only token “representation” in agenda-setting, question creation, governance, or IRB review
<input type="checkbox"/>	Building capacity for researchers, administrators, and community participants to work together on agenda-setting	<input type="checkbox"/>	Using deadlines or grant deliverables as an excuse to rush or avoid authentic community engagement
<input type="checkbox"/>	Researching, understanding, and disseminating the history of local policies, systems, and structures involved, including past harms and future opportunities	<input type="checkbox"/>	Using only historical administrative data to describe the problem, without a clear plan of action to improve outcomes
<input type="checkbox"/>	Building data literacy among organizations and community members, which could range from light engagement through public activities like data “gallery walks” to more intense involvement, such as community-based participatory action research	<input type="checkbox"/>	Failing to manage expectations around what the data are capable of telling or how long it will take to see marked changes in data, actions, and outcomes
<input type="checkbox"/>	Establishing a common language and agreed-upon sources and methods for reporting on community-based indicators	<input type="checkbox"/>	Failing to revisit indicator and outcome metrics regularly and revise when necessary
<input type="checkbox"/>	Clearly discerning who decides how to frame the problem or determine what questions to ask	<input type="checkbox"/>	Relying on academic institutions to frame the problem and research questions while failing to engage community-based organizations
<input type="checkbox"/>	Planning that includes the use of an asset; creating a framework that aims to clarify how to improve policy, services, and outcomes	<input type="checkbox"/>	Planning that includes the use of a deficit; creating a framework to describe outcomes
<input type="checkbox"/>	Lifting up the research needs of the community to funders; helping shape funding strategy with funders to support community-driven research	<input type="checkbox"/>	Accepting grant/philanthropic funding for a project that is not a community priority or need

Source: Actionable Intelligence for Social Policy, University of Pennsylvania¹⁴

SECTION II: GATHER STUDENT DATA

Data Identification

Data collection requires careful planning and consideration to occur completely, accurately, and without bias. Bias in data collection often takes two forms: selection bias and confirmation bias.¹⁵ Definitions of these terms according to Oxford Reference appear in the following figure.

Main Types of Bias in Data Collection







SELECTION BIAS	Systematic error due to differences between those selected for study and those not selected.
CONFIRMATION BIAS	The tendency to test one's beliefs or conjectures by seeking evidence that might confirm or verify them and to ignore evidence that might disconfirm or refute them.

Source: Oxford Reference¹⁶

In addition to these sources of bias, data teams must consider what demographic data to use to ensure inclusivity and data subjects' support. A report on data collection and considerations from the Charles and Lynn Schusterman Family Philanthropies offers the reflection questions in the tool *Equitable Data Identification Reflection Questions* to guide data identification. This tool provides additional space for notes or comments when using this toolkit during a particular data project.¹⁷

Furthermore, research questions and data identification should align with the relevant community and equity goals—including expanding equitable outcomes or reducing negative impacts—and consider who collects certain data and how. Action steps for equitable data identification and collection include those in the following figure.¹⁸

Actions for Equitable Data Process Design and Collection

	Develop research questions that reflect the community's values and perspectives.
	Create research questions that consider the community's context by examining how race, language, power, and privilege shape structural inequities.
	Engage community stakeholders to understand what type(s) of data the community trusts.
	Determine how the community likes to receive data and ensure the data accurately [reflect] their preferences. Create racially and ethnically diverse research teams, and encourage them to incorporate multiple perspectives to be incorporated in the research.
	Train the research team to look for verbal and nonverbal cues, challenge personal assumptions and biases, and take note of behavioral or verbal nuances.
	Cognitively test instruments with your specific population.

Source: Child Trends¹⁹

Data Compilation

Data should include quantitative *and* qualitative data to ensure student and stakeholder perspectives, experiences, and contexts inform research and action. Qualitative research approaches may include surveys, focus groups, interviews, parent-teacher conferences, and other methods to collect information directly from relevant district community members.²⁰ Although qualitative data does not necessarily apply to all data projects, questions, and presentations, data teams should evaluate whether qualitative data are possible and appropriate and what insights such perspectives may lend.²¹



More Information

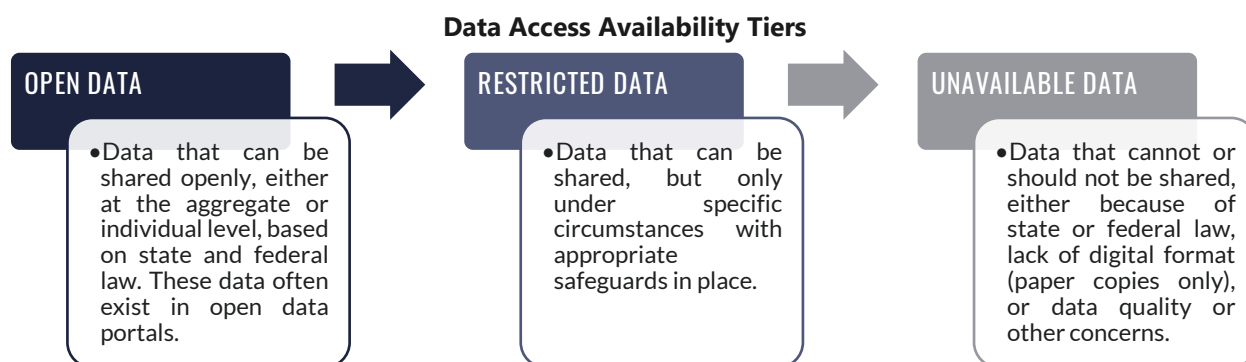
For more information on data collection specific to different subgroups and populations, please see pages 22 to 45 in the report, [More Than Numbers: A Guide Toward Diversity, Equity, and Inclusion \(DEI\) in Data Collection](#).²² These pages present survey structure and demographic-specific best practices and examples for equitable and inclusive data collection.²³

Once data teams and district leaders identify and collect data, they should compile the information into a **data biography**. A data biography is “a comprehensive background of the conception, birth and life of any data set” and “is an essential step along the path to equity in data science.”²⁴ These tools ensure data teams have readily available answers to the questions contained in the tool *Data Biography Template*.²⁵

Additionally, data teams must carefully review data privacy and confidentiality regulations. Because certain data may include Personally Identifiable Information (PII), health information, or other information that should not be distributed publicly, teams are responsible for understanding and complying with privacy regulations and should create a plan for maintaining confidentiality.²⁶ Considerations when determining what data to collect and how to use it appropriately include:²⁷

- Whether the data include PII;
- Whether the data include sensitive information that district stakeholders want to keep private;
- Whether regulations of certain data exist (e.g., Family Educational Rights and Privacy Act (FERPA));
- Whether the district or data team has a plan for storing data securely;
- Who has access to data, when, and why; and
- How long the district or data team will retain the data.

When identifying data and how data teams can use the data, the Actionable Intelligence for Social Policy (AISP) at the University of Pennsylvania recommends using a tiered system to classify data to establish the extent to which they may use and share information. This system appears in the following figure.²⁸



Source: Actionable Intelligence for Social Policy, University of Pennsylvania²⁹

SECTION II: GATHER STUDENT DATA



EQUITABLE DATA IDENTIFICATION REFLECTION QUESTIONS

Description: Review the following questions regarding data identification and collection and add responses to the space provided. District leaders and data team members may use this tool individually or as a group.

What is the purpose of my data collection tool (e.g., RSVP form, application, program evaluation), and do I need to collect demographic data?

Does the program or strategy want to reach a specific population? Why?

What demographic data do we need to evaluate whether we are making progress?

What are the criteria for distinguishing between “nice to know” and “need to know” data?

What specific decisions will the data help inform? Will the data be pertinent and actionable?

Who will review the demographic data? Who will use these data to make decisions?

Source: Charles and Lynn Schusterman Family Philanthropies³⁰

SECTION II: GATHER STUDENT DATA



DATA BIOGRAPHY TEMPLATE

Description: Use the following template as a guide for creating a data biography. If possible, add these questions to the top row of a spreadsheet, as shown in templates accessible [here](#), for easy access and use.³¹

DATASET NAME	LINK TO SOURCE	LINK TO STORAGE SOURCE	WHO COLLECTED DATA	WHO OWNS DATA	HOW WAS DATA COLLECTED	SAMPLE SIZE	WHO WAS INCLUDED/ EXCLUDED	COLLECTION DATE(S)	LAST DATA UPDATE	WHY WAS DATA COLLECTED	NOTES ON DATA QUALITY	NOTES ON DATA USE CONDITIONS

Source: We All Count³²

SECTION II: GATHER STUDENT DATA



RACIAL EQUITY IN DATA COLLECTION CHECKLIST

Directions: Consider the following positive and problematic practices and mark the practices that you currently implement. After reviewing all practices, identify strengths and areas of improvement.

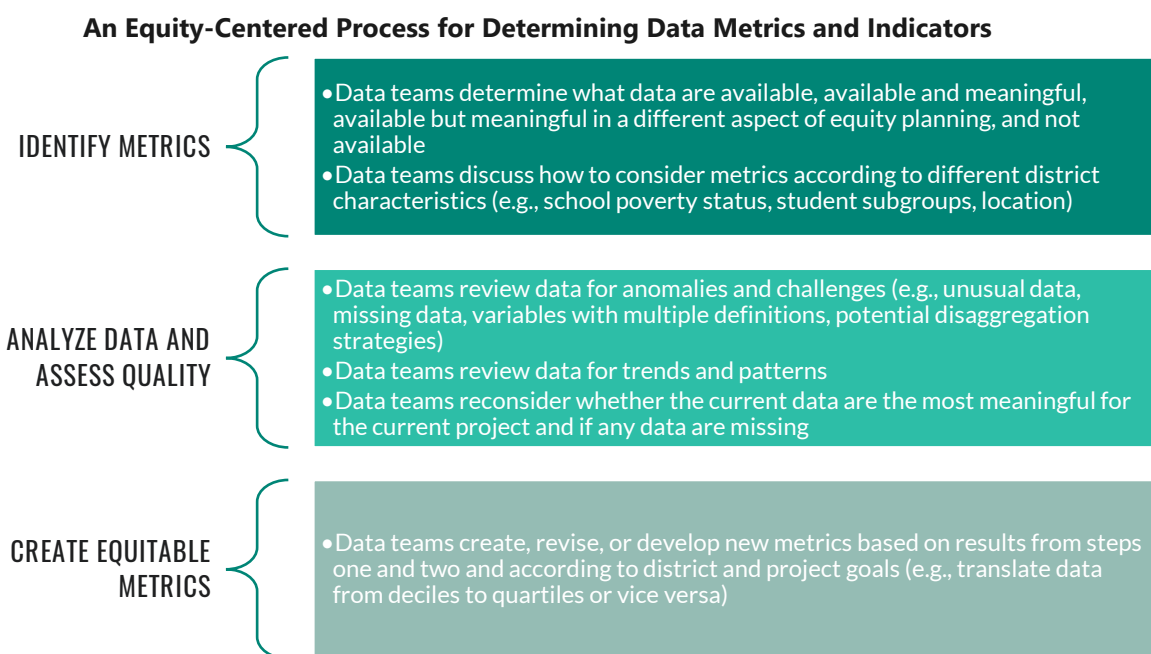
POSITIVE PRACTICES		PROBLEMATIC PRACTICES	
<input type="checkbox"/>	Adhering to data management best practices to secure data as they are collected—specifically, with carefully considered, role-based access	<input type="checkbox"/>	Assuming that programmatic staff (those most likely to collect data) have training in data management and data security
<input type="checkbox"/>	Including agency staff and community stakeholders in defining which data should be collected or reused	<input type="checkbox"/>	Inviting only researchers to identify data needs
<input type="checkbox"/>	Collaborating to develop a shared data collection agenda that is connected to practice, policy, and research	<input type="checkbox"/>	Collecting data that reinforces or confirms bias rather than informing practice and policy changes
<input type="checkbox"/>	Collaborating with agencies and community to generate a data development agenda—a plan for access and use of data that are needed to answer high-interest questions (e.g., expanding gender identity categories on a registration form; building support for digitizing eviction records)	<input type="checkbox"/>	Providing insufficient data labels (e.g., federal reporting in education has only seven race labels) or inconsistent categories across data sets (e.g., conflating race and ethnicity)
<input type="checkbox"/>	Working with staff to support equity-oriented data collection practices (e.g., programmatic staff to update a registration form, technical staff to update a “forced” field on a data entry platform)	<input type="checkbox"/>	Unwillingness to shift data collection practices based upon community feedback
<input type="checkbox"/>	Collecting only what is necessary to your context	<input type="checkbox"/>	Failing to consider which data carry an elevated risk of causing harm if redisclosed when determining which data to collect in your context (e.g., a housing program that collects resident HIV status)
<input type="checkbox"/>	Strong efforts to support metadata documentation, including key dimensions of metadata such as: <ul style="list-style-type: none"> ▪ Description ▪ Provenance ▪ Technical specifications ▪ Rights ▪ Preservation ▪ Citation 	<input type="checkbox"/>	Failure to clearly identify, explain, and document data integrity issues, including data that are: <ul style="list-style-type: none"> ▪ Inaccurate ▪ Undocumented ▪ Unavailable ▪ Incomplete ▪ Inconsistent
<input type="checkbox"/>	Including qualitative stories to contextualize quantitative data	<input type="checkbox"/>	Allowing quantitative data to “speak for itself” without context or discussion
<input type="checkbox"/>	Working with and developing flexible data systems that adapt to context, environment, or system changes	<input type="checkbox"/>	Working with and developing data systems that are static and offer limited access
<input type="checkbox"/>	Finding out why people “opt out” of providing data for surveys and other data collection efforts and using their feedback to minimize harm in future data collection processes	<input type="checkbox"/>	Collecting data purely for surveilling groups marginalized by inequitable systems and Black, indigenous, and other people of color (BIPOC).

Source: *Actionable Intelligence for Social Policy, University of Pennsylvania*³³

SECTION III: DISCUSS CURRENT GOALS, METRICS, AND DATA

Metrics Availability and Selection

Choosing relevant and equitable metrics for a data project involves a multi-step process to ensure data teams analyze useful, high-quality, and goal-specific metrics. This process, shown in the following figure, can apply to numerous datasets and purposes, as indicated by [a report from the Center on Great Teachers and Leaders](#) (GTL), which applies the process to state-level data.³⁴



Source: Center on Great Teachers and Leaders³⁵

Additionally, the template *Metric Considerations for Equity* below supports data teams in discussing and determining what metrics are available, what steps would provide access to unavailable metrics, and whether metrics are useful equity indicators.

Notably, data projects often confront missing data due to data systems not collecting race and ethnicity data according to regulations. As such, data teams must discuss the metrics they use and how missing relevant data may distort analyses and conclusions.³⁶ According to the Massachusetts Department of Public Health's (MDPH) [Racial Data Equity Road Map: Data as a Tool Towards Ending Structural Racism](#), common reasons for systems missing data include:³⁷

- A lack of understanding of the importance of collecting this information;
- A lack of capacity to use standards;
- Discomfort with talking about or acknowledging race/ethnicity; and
- Assumptions that asking about race and ethnicity makes communities of color uncomfortable.

Furthermore, data teams must deeply understand their metrics and data—including why teams collect data, how teams collect data, and who are and *who are not* included in data—since presentations, visualizations, and communications cannot fix biased or racist data later in the research process.³⁸

Algorithmic Systems and Statistical Tools

Data teams and school districts must use algorithmic systems and statistical tools carefully, as their ability to increase efficiency may also lead to biased outcomes, accountability questions, and potential errors.³⁹ Notably, algorithms inherently have biases, as these processes possess the biases of the people who design them and the data they include.⁴⁰ Therefore, the five principles in the following figure support data teams in maintaining accountability and reducing bias when leveraging algorithms to make decisions.⁴¹

“Algorithmic systems are tools that rely on algorithms. Algorithms are processes performed by a computer to answer a question, make a decision, or carry out a task, often in domains that would traditionally have been handled by humans.”⁴²

- Center for Democracy and Technology

Principles for Accountability in Algorithmic Systems

PRINCIPLE	DESCRIPTION
Responsibility	Create clear channels for communication about potential adverse impacts of algorithms and name specific individuals tasked with addressing these impacts
Explainability	Ensure that algorithmic decisions and the data driving decisions can be explained to end-users and stakeholders in non-technical terms
Accuracy	Identify, log, and explain sources of error and uncertainty so that intended and unintended consequences can be anticipated and planned for
Auditability	Enable third parties to monitor and evaluate algorithmic decisions
Fairness	Ensure that algorithmic decisions do not create discriminatory or unjust impacts

Source: *Actionable Intelligence for Social Policy*, University of Pennsylvania; *Fairness, Accountability, and Transparency in Machine Learning*⁴³

Additionally, best practices for using algorithmic systems and statistical tools include:⁴⁴

- Consider the potential impacts and effectiveness of the system before use;
- Only use algorithmic systems for their intended purpose;
- Engage stakeholders early and throughout the process;
- Implement data governance (e.g., limited access);
- Examine input data for bias;
- Maintain human involvement to support decision-making and accountability;
- Conduct regular audits;
- Create protocols for accountability and redress; and
- Ensure legal compliance.

SECTION III: DISCUSS CURRENT GOALS, METRICS, AND DATA



METRICS CONSIDERATIONS FOR EQUITY

Description: Use the following template as a guide to determining access to and usefulness of equity-centered metrics. If possible, add these table headers to the top row of a spreadsheet for easy access and use.

METRICS	CONSIDERATIONS FOR METRIC CHOICES		
	Do you have access to these metrics? (Yes/No/Unknown)	Are these metrics meaningful indicators of equitable access? (Yes/No)	If meaningful but currently unavailable, what steps do you need to take to collect these metrics?

Source: Center on Great Teachers and Leaders at American Institutes for Research⁴⁵

SECTION III: DISCUSS CURRENT GOALS, METRICS, AND DATA



RACIAL EQUITY IN ALGORITHMS AND STATISTICAL TOOLS CHECKLIST

Directions: Consider the following positive and problematic practices and mark the practices that you currently implement. After reviewing all practices, identify strengths and areas of improvement.

POSITIVE PRACTICES		PROBLEMATIC PRACTICES	
<input type="checkbox"/>	Involving diverse stakeholders, including specific community advisory boards, in early conversations about the purpose of an algorithm prior to development and implementation	<input type="checkbox"/>	Developing and implementing algorithms for human services without stakeholder involvement or alignment across multiple agencies
<input type="checkbox"/>	Determining responsibility for oversight of algorithm development and implementation, with clear communication channels for input	<input type="checkbox"/>	Inadequate opportunities for community feedback regarding algorithm development and implementation
<input type="checkbox"/>	Mandatory impact assessments that involve thoroughly thinking through potential intended and unintended consequences	<input type="checkbox"/>	Failure to think through intended and unintended outcomes
<input type="checkbox"/>	Clearly identifying and communicating potential benefits and risks to stakeholders	<input type="checkbox"/>	Implementing an algorithm with no clear benefit to individuals included in the data
<input type="checkbox"/>	Human-led algorithm use (i.e., human can override algorithm at any point in the process)	<input type="checkbox"/>	Elevating algorithmic decision making over judgment of seasoned practitioners; no human involvement
<input type="checkbox"/>	Transparency regarding what data drive the algorithm and how, e.g., description of design and testing process, list of factors that the tool uses, thresholds used, outcome data used to develop and validate the tool, definitions of what an instrument forecasts and for what time period	<input type="checkbox"/>	Use of a “black box” or proprietary algorithm that does not allow for transparency or replication
<input type="checkbox"/>	Efforts to improve the quality of data included within the algorithm, including efforts to balance the use of risk and protective factors	<input type="checkbox"/>	Use of data with data integrity issues or “dirty” data that reflect bias in data collection (resulting in garbage in/garbage out)
<input type="checkbox"/>	Using “early warning” indicators to provide meaningful services and supports to clients	<input type="checkbox"/>	Using “early warning” indicators for increased surveillance, punitive action, monitoring, or “threat” amplification via a risk score
<input type="checkbox"/>	Using multiple measures of validity and fairness. e.g., testing of metrics that center racial equity such as false positives/negatives across race and gender	<input type="checkbox"/>	Use of biometric data (specifically facial recognition)

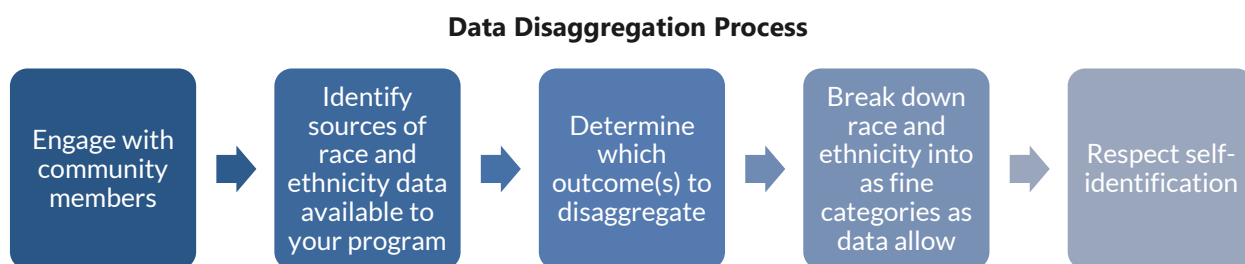
Source: *Actionable Intelligence for Social Policy, University of Pennsylvania*⁴⁶

SECTION IV: ANALYZE DATA TO IDENTIFY ROOT CAUSES

Disaggregation

Disaggregating data by demographics and subgroups is a common approach to data analyses as it enables teams to target specific factors and observe how these factors manifest throughout a population. Although disaggregation can be difficult (e.g., highly diverse populations may have small subgroups that get reduced to an “other” category), oversampling, self-identifying options, and cross-tabulating support accurate results.⁴⁷ Nonetheless, data teams must be wary of focusing too much on a subgroup that may already be “over-surveyed.”⁴⁸

Additionally, data teams may use the steps described in the following figure to analyze data for demographic differences and disaggregate information to understand experiences and outcomes demonstrated by students or other education stakeholders. This process comes from the MDPH road map noted above but may also apply to education and other sectors. Additional details and step-specific examples with a public health focus are available in the [road map](#).⁴⁹



Source: Massachusetts Department of Public Health⁵⁰

Additional best practices include using proportions and rates, analyzing statistically significant and insignificant outcomes, and disaggregating opportunities. Proportion and rates, rather than numbers, provide more accurate comparisons as the results account for differences in subgroup population sizes. Data teams should also review results that demonstrate statistical significance *and those that do not* since small subgroup population sizes may prevent differences from appearing as statistically significant. Notably, small differences may indicate unanticipated outcomes and be cause for concern.⁵¹ Furthermore, data teams must disaggregate opportunities to identify other potential patterns and systemic issues and avoid deficit-based thinking.⁵²

After disaggregating data, data teams should reflect on what they see and their initial reactions before adding local and historical contexts, policies, and systems to the research process. Example reflection questions include:⁵³

- Are you comfortable with the completeness and quality of your data, or is additional work needed in this area?
- Did you identify disparities among racial groups in the outcomes you are examining?
- Which stakeholders will you engage to assist in interpreting the data and planning your next steps?

Contextualization and Perspectives

Considering various contexts (e.g., cultural, historical, mathematical, social) and perspectives (i.e., researchers' and data populations') enables data teams to understand their findings as interpretations, decrease the likelihood of subjective findings causing or sustaining inequities, and avoid deficit-based thinking.⁵⁴ Understanding research outcomes as interpretations cautions that data team members have

SECTION IV: ANALYZE DATA TO IDENTIFY ROOT CAUSES

personal experiences and biases, and while metrics and indicators show trends, data teams add meaning. Therefore, viewing outcomes as interpretations allows data teams to demonstrate that “data decisions come from a place of understanding and not one of unintentional ignorance or outright pretending.”⁵⁵

Additionally, contextual information and lived experiences provide insights into systemic issues and help prevent deficit-based thinking. Deficit-based thinking presents a barrier to equity as it causes stakeholders to blame individuals rather than root causes.⁵⁶ For example, when teachers with deficit-based thinking review test scores and see certain demographics performing at a lower level (e.g., English learners, students with disabilities), they attribute poor performance to student challenges. By blaming students for challenges, teachers or other stakeholders avoid responsibility and do not address the structural issue. Alternatively, understanding contexts and asset-based thinking shifts the focus to underlying challenges causing lower test scores and focuses on student strengths. Therefore, understanding context may help explain differences across groups and enable more effective responses.⁵⁷ The following figure identifies the differences in asset-based and deficit-based thinking.

Asset-Based Versus Deficit-Based Thinking

ASSET-BASED	DEFICIT-BASED
Strengths driven	Needs driven
Opportunity focus	Problems focus
Internal focus	External focus
What is present that we can build upon?	What is missing that we must go find?
May lead to new, unexpected responses	May lead to downward spiral of burnout, depression, or dysfunction

Source: *The University of Memphis*⁵⁸

To contextualize data and understand student and district stakeholder perspectives, data teams may implement the following practices:⁵⁹

- Administer surveys with open-ended questions;
- Discuss lived experiences during parent-teacher conferences;
- Conduct interviews;
- Hold focus groups;
- Gather stakeholder feedback on initial data;
- Include stakeholders in the data analysis and decision-making processes; and
- Use quantitative data that demonstrates local and community contexts (e.g., the **Child Opportunity Index**).

SECTION IV: ANALYZE DATA TO IDENTIFY ROOT CAUSES



FACTOR ANALYSIS TOOL

Description: Use the following template to collaboratively analyze a challenge identified from data and repeat the process for any additional challenges. Be sure to devote ample time to this activity as rushing to conclusions may lead to ineffective solutions.⁶⁰

1. Define the current outcomes for a population and relevant subgroups of a population (e.g., race, ethnicity, gender, race × gender)

2. Identify causal factors. Collaboratively identify what is contributing to the outcomes. Gains being made: What is contributing to the bright spot? No gains: what is happening? Where is the population/subgroup losing ground?

3. Get to the underlying root causes. Ask “Why?” five times to understand the causal factors and the problem and solutions for the whole population or subgroup(s). What is the underlying reason the problem or solution is occurring? What is helping to shape the underlying reasons?

Source: *Actionable Intelligence for Social Policy, University of Pennsylvania*⁶¹

SECTION IV: ANALYZE DATA TO IDENTIFY ROOT CAUSES



RACIAL EQUITY IN DATA ANALYSIS CHECKLIST

Directions: Consider the following positive and problematic practices and mark the practices that you currently implement. After reviewing all practices, identify strengths and areas of improvement.

POSITIVE PRACTICES		PROBLEMATIC PRACTICES	
<input type="checkbox"/>	Using participatory research to bring multiple perspectives to the interpretation of the data	<input type="checkbox"/>	Describing outcomes without examining larger systems, policies, and social conditions that contribute to disparities in outcomes (e.g., poverty, housing segregation, access to education)
<input type="checkbox"/>	Engaging domain experts (e.g., agency staff, caseworkers) and methods experts (e.g., data scientists, statisticians) to ensure that the data model used is appropriate to examine the research questions in the local context	<input type="checkbox"/>	Applying a “one size fits all” approach to analysis (i.e., what works in one place may not be appropriate elsewhere)
<input type="checkbox"/>	Correlating place to outcomes (e.g., overlaying redlining data to outcomes)	<input type="checkbox"/>	Leaving out the role of historical policies in the interpretation of findings
<input type="checkbox"/>	Using appropriate comparison groups to contextualize findings	<input type="checkbox"/>	Making default comparisons to White outcomes (e.g., assuming White outcomes are normative)
<input type="checkbox"/>	Employing mixed methods approaches when developing the analytic plan, including purposefully seeking out qualitative data (interviews, focus groups, narrative, long-form surveys) in conjunction with quantitative administrative data to better understand the lived experience of clients	<input type="checkbox"/>	Using one-dimensional data to propel an agenda (e.g., use of student test scores in isolation from contextual factors such as teacher turnover, school-level demographics)
<input type="checkbox"/>	Disaggregating data and analyzing intersectional experiences (e.g., looking at race by gender)	<input type="checkbox"/>	Disregarding the individual or community context in the method of analysis and interpretation of results
<input type="checkbox"/>	Empowering professionals and community members to use data to improve their work and their communities	<input type="checkbox"/>	Analyzing data with no intent to drive action or change that benefits those being served

Source: *Actionable Intelligence for Social Policy*, University of Pennsylvania⁶²

SECTION V: CREATE A PLAN AND ACT



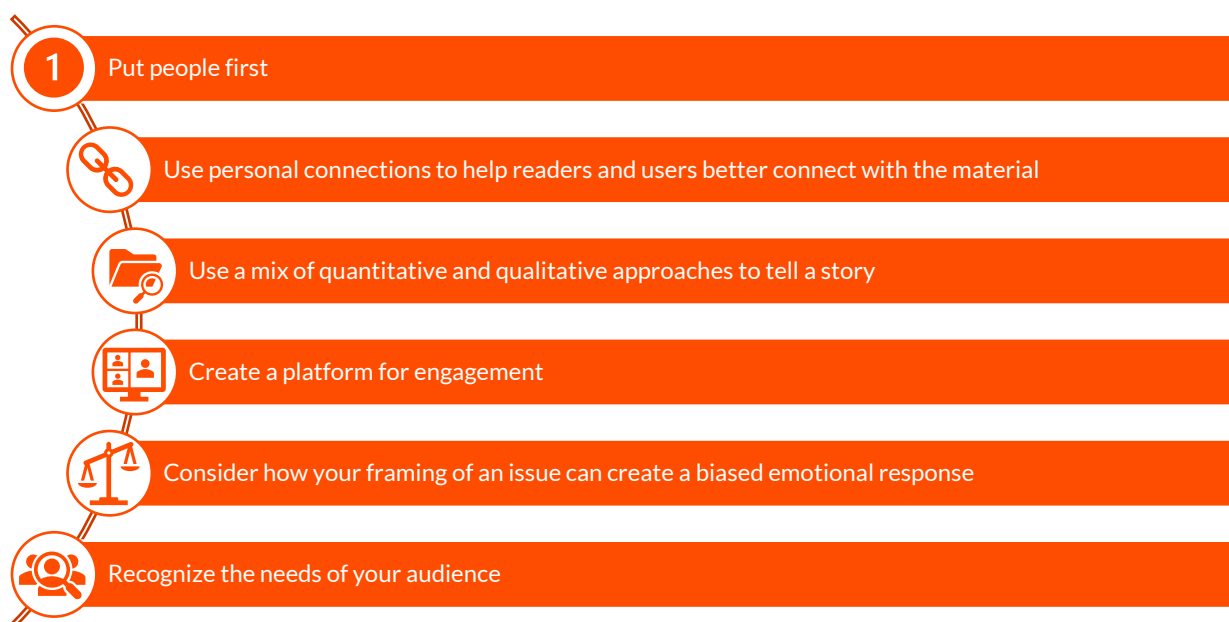
Before moving onto the fifth and final step of the data process, ensure that data team members fully understand steps one through four. As described by the Urban Institute:⁶³

Data visualizers and communicators must first thoroughly understand the data they are using, how those data were collected, why they were collected, and who is and is not reflected in those data before they begin creating charts and graphics [...] applying DEI thinking to visualizations alone will not fix the problems of data or analyses that are biased or racist.

Communication and Visualization

Data teams must carefully choose the language, charts, images, and platforms used to convey interpretations accurately and equitably to their audience.⁶⁴ To successfully disseminate data that later inform district initiatives, programs, and other actions, data teams should connect and empathize with their audience. This empathy enables data teams to produce visualizations and stories that present lived experiences that manifest in data more accurately. The following figure presents six practices for ensuring empathy in data communication.⁶⁵

Best Practices for Empathizing with Communities



Source: Urban Institute⁶⁶

Narratives and Language

Translating data and interpretations into forms of communication requires data teams to consider their audience and content to meet the project's goals and convey outcomes successfully. Understanding the audience is necessary as identities and associated histories and experiences impact how to communicate information to the groups represented in the data.⁶⁷ Additional stakeholders who do not appear in data also factor into communication, and data teams must consider what information is relevant to these groups.⁶⁸ Identities and factors to consider in data communication include:⁶⁹

- Race;
- Ethnicity;
- Gender identity expression;
- Age;

SECTION V: CREATE A PLAN AND ACT

- Preferred language;
- Literacy level;
- Culture;
- Religion;
- Sexual orientation;
- Ability; and
- Lived experience with the issue.

Additionally, data teams must craft language and messaging that demonstrates an equity mindset and avoids deficit-based thinking and “victim-blaming,” defined by Child Trends as “when persistent differences are attributed to the attitudes, actions, and abilities of an individual or racial and/or ethnic group.”⁷⁰ Strategies to show equitable practices and avoid victim-blaming include involving analyzed groups in the communication process, contextualizing the presented information, carefully wording information (e.g., writing students with disabilities rather than disabled students), and maintaining transparency regarding the extent of equity considerations throughout the process.⁷¹

Furthermore, the specific terms and descriptions written in communication tools must remain unbiased, respectful, and reflective of current terminology. Titles—often the first words audiences see—and labels are short but must prioritize inclusivity and equity over brevity.⁷² According to best practices, the language around data should “[place] numbers in context” and “[name] racism and sexism when it is present in those numbers.”⁷³ The following table highlights examples from the Urban Institute of how to reframe language to promote equity.

Language Adjustments to Promote Equity

WRITTEN COMPONENT	PROBLEMATIC LANGUAGE	ISSUE	REVISED LANGUAGE	REASONING
Title	“Mental Health in Jail: Rate of mental health diagnosis of inmates”	<ul style="list-style-type: none"> ▪ Ignores the role racism and discrimination play in how likely incarcerated people are to receive a mental illness diagnosis ▪ Uses the term “inmate,” which some have argued is dehumanizing and references people by their crimes and punishments 	“Racism in Jail: People of color less likely to get mental health diagnosis”	<ul style="list-style-type: none"> ▪ More accurately reflects the main findings of the research (which focused on racial disparities in the jail system) ▪ Names the forces of oppression at work (racism in prison) ▪ References people, not inmates.
Labels	“More Poverty”	Not inclusive of different groups: poverty refers to an experience, not a static description	“Larger proportion of people experiencing poverty”	More inclusive
	“More Black”	References skin color, not people	“Larger Black population”	References people

Source: Urban Institute⁷⁴




Additionally, data teams must remain current with the appropriate terms and phrasing for different subgroups to ensure that data and communication tools accurately and respectfully present people and their experiences. However, monitoring current terms and tailoring communication tools to specific audiences presents a complex challenge as different generations often use and are familiar with different terms.⁷⁵

SECTION V: CREATE A PLAN AND ACT

Visuals and Representation

How data teams visualize and represent analyzed subgroups impacts how the audience perceives data (e.g., accurately or inaccurately), the analyzed subgroups (e.g., more or less important), and social issues (e.g., absence of or perpetuated stereotypes). Data teams should integrate the practices for colors, icons, and visual complexity shown in the following figure and [described by the Urban Institute](#) to help produce equitable data communication tools.⁷⁶

Best Practices for Equitable Visuals and Representation

 COLORS	<ul style="list-style-type: none">▪ Choose color palettes that use high-contrast colors and ensure accessibility for those with vision challenges▪ Avoid stereotypical colors that reinforce racial and gender stereotypes (e.g., blue for boys, pink for girls)▪ Avoid color palettes that use the same color in different shades to represent different races as this may indicate that higher color saturation equates to having greater value▪ Avoid having one group appear in gray while others appear in bright colors as this may demonstrate lesser versus greater importance▪ Consider using multiple graphs to avoid color complications▪ Consider how certain colors may have an emotional connotation and if the audience could perceive certain data or subgroups negatively or positively
 ICONS	<ul style="list-style-type: none">▪ Include individuals of different backgrounds and identities when illustrating groups of people▪ Reflect on whether icons accurately reflect content (e.g., an image of a child for child mortality is misrepresentative, an image of a wheelchair for jobs may convey that the people with jobs were disabled as opposed to the graphic demonstrating inclusivity)▪ Ensure certain groups are not misrepresented or overrepresented as often seen with gender stereotypes (e.g., nurses being female, managers being male)▪ Avoid depicting certain groups as helpless or demonstrating power hierarchies▪ Gather input from others to ensure that icons and images do not appear offensive
 COMPLEXITY	<ul style="list-style-type: none">▪ Do not let data “speak for themselves”▪ Consider the context of data visuals and reference diverse sources that represent the analyzed population▪ Champion complexity in visuals as simplifications may overlook necessary information and social issues▪ Consider more complex designs to increase audience connection and engagement▪ Think critically about whether certain data should appear as visuals, text, or numbers

Source: Urban Institute⁷⁷

Which subgroups and in what order they appear in visuals and communication tools can also lead to inequitable representation and unintended messaging. Often, data availability limits the level of disaggregation available to data teams. However, failing to present or acknowledge who is and is not shown in a communication tool may convey that these groups are not important or valued.⁷⁸ Common problems with missing data include:⁷⁹

- Lumping or splitting groups;
- Using nonbinary gender categories;
- Using catch-all groups often labeled as “other;” and
- Choosing not to include all groups.

“That which we ignore reveals more than what we give our attention do ... Spots that we’ve left blank reveal our hidden social biases and indifferences.”⁸⁰

– Mimi Onuoha

Additionally, the order in which subgroups appear may indicate or convey biases as those listed first appear as the more important group or more relevant audience.⁸¹ To avoid problematic ordering, data teams may

SECTION V: CREATE A PLAN AND ACT

create interactive communication tools that allow audiences to choose which groups appear and how and ask the following reflection questions when creating visuals:⁸²

- Does your study focus on a particular community? If it does, that group should be presented first.
- Is there a particular argument or story you are trying to tell? If so, the order or presentation of results should reflect that argument.
- Is there a quantitative relationship that can guide how the groups are ordered? Can they be sorted alphabetically or by population size, sample size (weighted or unweighted), or magnitude or effect of the results?



More Information: Mediums and Platforms

The communication tools themselves (i.e., the medium, platform) also impact communication and action as all audience members must have access to the information before being able to form opinions, provide input, and experience progress regarding equity.⁸³ For additional information on approaches to presenting race-related narratives with data, please see pages 79 through 86 of the Government Alliance on Race and Equity's (GARE) "[GARE Communications Guide](#)."⁸⁴

Action

Data teams must transition to planning, acting, and evaluating after analyzing and presenting data by identifying which inequities to address and using research-based interventions designed for the intended population.⁸⁵ Although actions are specific to district data, cultures, and current policies, district actions must go beyond symbolic change.⁸⁶ The following figure contains a two-step process for determining post-research initiatives and associated guiding questions.

Steps for Processing the Path Forward

Step 1: Prioritize the inequity you will address

- Is the feasibility of addressing the inequity low, medium, or high?
- If the inequity is reduced or eliminated, what impact will that have on the community impacted? Is the impact low, medium, or high?
- Which inequity will the team address first?

Step 2: Plot current and potential program initiatives and strategies to compare feasibility and impact

- What inequity is this strategy (i.e., activity or program) trying to address?
- Who will benefit from this strategy?
- Who could be harmed by this strategy? What will you do to avoid this?
- Who influences how this activity or program is put into place? Who else should provide input or influence this activity or program?

Source: Massachusetts Department of Public Health⁸⁷

Once a district chooses its course of action, leaders must select an evaluation system for measuring effectiveness and continue to engage stakeholders in the action and evaluation processes. Leaders can support these steps by establishing [SMARTIE goals](#), using the [Plan-Do-Study-Act cycle](#), and reflecting on anticipated and future change and change management.⁸⁸ Examples of reflection questions include:⁸⁹

- What can be done to increase the chances of success?
- Whose support is needed for this change strategy?
- What results will show that this innovation is working?
- How long will it take for those results to appear?
- How might you amplify—or help people see—these results sooner?
- What barriers do you foresee in sustaining the effort? How might those be overcome?

SECTION V: CREATE A PLAN AND ACT



EQUITY DATA COMMUNICATION TOOL CHECKLIST

Directions: Use the following checklist to guide data teams in creating communication tools that present data and interpretations. Mark the components as the data team develops each communication tool to ensure that products demonstrate equity and support equitable actions in the future.

KEY COMPONENTS OF EQUITY-CENTERED COMMUNICATION TOOLS

- Key takeaway message(s)
- Key definitions (especially around defining equity, necessary technical terms, and any acronyms used)
- Data highlighting inequity—provide a hook or compelling statistic
- Clear, understandable graphics
- Information related to the program that is necessary for the audience to know (e.g., population served, eligibility criteria)
- Framing that recognizes the structural and systemic drivers of the inequity
- Next steps, solutions, and/or opportunities for intervention

Source: Massachusetts Department of Public Health⁹⁰

SECTION V: CREATE A PLAN AND ACT



RACIAL EQUITY IN REPORTING AND DISSEMINATION CHECKLIST

Directions: Consider the following positive and problematic practices and mark the practices that you currently implement. After reviewing all practices, identify strengths and areas of improvement.

POSITIVE PRACTICES		PROBLEMATIC PRACTICES	
<input type="checkbox"/>	Creating a range of products to communicate findings across a wide variety of audiences via both online and offline methods of dissemination	<input type="checkbox"/>	Creating one output that is inaccessible to general audiences (e.g., a 100-page static report, content behind a paywall)
<input type="checkbox"/>	Developing differentiated messaging for different audiences that considers the appropriate level of detail and technical jargon, language, length, format, etc.	<input type="checkbox"/>	Using intentionally dense language with low readability, especially for non-native language learners
<input type="checkbox"/>	Reporting data in an actionable form to improve the lives of those represented in the data	<input type="checkbox"/>	Reporting data that are not actionable or that are intended to be punitive
<input type="checkbox"/>	Providing public access to aggregate data (e.g., dashboards, routine reports)	<input type="checkbox"/>	Putting materials solely online, particularly behind a paywall
<input type="checkbox"/>	Acknowledging structural racism or other harms to communities that are embedded in the data	<input type="checkbox"/>	Attempting to describe individual experiences with aggregate or “whole population” data without analyzing disparate impact based on race, gender, and other intersections of identity
<input type="checkbox"/>	Including stories as a complement to quantitative findings to better contextualize the lived experience represented by the numbers	<input type="checkbox"/>	Allowing the data to “speak for itself” without context or discussion
<input type="checkbox"/>	Providing clear documentation of the data analysis process along with analytic files, so that others can reproduce the results	<input type="checkbox"/>	Obscuring the analytic approach used in a way that limits reproducibility
<input type="checkbox"/>	Conducting impact analyses multiple times during the project (e.g., at the beginning, middle, and end). Asking the core question: does this work mitigate, worsen, or ignore existing disparities?	<input type="checkbox"/>	Disregarding how findings will impact individuals or communities

Source: *Actionable Intelligence for Social Policy, University of Pennsylvania*⁹¹

APPENDIX

Spotlight Districts

Palo Alto Unified School District

Through the recent Comprehensive Coordinated Early Intervening Services (CCEIS) plan assessment, Palo Alto Unified School District (PAUSD) recognized that Black and Hispanic students disproportionately receive special education classification and services. These disproportionate results led the district to analyze enrollment, demographic, and classification data.⁹² These and other data comparing demographic representation throughout the district compared to representation in special education services indicated that Black and Hispanic receive improper classification.⁹³

After analyzing the data and searching for root causes, the district identified three reasons: inadequate district tracking and interventions, overidentifying English learners in special education programs, and racial biases.⁹⁴ Using these root causes, PAUSD aims to decrease special education referrals by 30 percent by September 2022 through strategies such as:⁹⁵

- Providing staff training on implicit bias;
- Establishing a new team for bilingual assessments; and
- Ensuring collaboration between special education and English learner staff identifying students for special education services.

Baltimore City Public Schools










Baltimore City Public Schools (BCPS), a highly diverse district, recognizes that inequities are an “institutional challenge” and that leaders are responsible for addressing issues and advocating for others.⁹⁶ As such, the district revised its data collection and reporting system from an annual review of student performance and behavioral statistics to prioritize new data collection methods and disaggregation by certain student demographics (e.g., race, socio-economic disadvantage).⁹⁷ Four of BCPS’s key action steps include:⁹⁸

- Disaggregating all data based on race and other important demographic markers, which showed, for example, that graduation rates were lower and suspension rates were higher for Black and Latinx students;
- Looking more actively at the racial breakdown of hiring data, including who the district was hiring and, more importantly, where teachers were being placed;
- Conducting focus groups and interviews with students and teachers to better understand the stories behind the data that system leaders were uncovering (“You have to complicate what you think you know from the numbers,” explains Dr. Williams. “You can make up any story you want about quantitative data, but you need to talk with people to understand what’s really going on.”); and
- Developing an Equity Dashboard that, for the first time, enabled schools to access and view the disaggregated data in a clear, visual way.

Resource Guide

The following figure provides a brief list of key sources cited throughout this toolkit and additional information on data processes and practices that promote equity.

Resources for Prioritizing Equity in Data Processes

RESOURCE TITLE	ORGANIZATION/AUTHOR	HYPERLINK
A Toolkit for Centering Racial Equity Throughout Data Integration ⁹⁹	Actionable Intelligence for Social Policy, University of Pennsylvania	
Moving Toward Equity Data Review Tool: Getting Started with Equitable Access Data ¹⁰⁰	Center on Great Teachers & Leaders at American Institutes for Research	
More than Numbers: A Guide Toward Diversity, Equity, and Inclusion (DEI) in Data Collection ¹⁰¹	Charles and Lynn Schusterman Family Philanthropies	
GARE Communications Guide ¹⁰²	Government Alliance on Race and Equity (GARE)	
Hands-On Data Visualization: Interactive Storytelling from Spreadsheets to Code ¹⁰³	Jack Dougherty and Ilya Ilyankou	
Districts Advancing Racial Equity (DARE) Tool ¹⁰⁴	Learning Policy Institute and Racial Equity Leadership Network	
Racial Data Equity Road Map: Data as a Tool Towards Ending Structural Racism ¹⁰⁵	Massachusetts Department of Public Health	
Do No Harm Guide: Applying Equity Awareness in Data Visualization ¹⁰⁶	Urban Institute	
The Data Equity Framework ¹⁰⁷	We All Count	

Source: Multiple sources cited within the figure.

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APPENDIX AND ENDNOTES

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APPENDIX AND ENDNOTES

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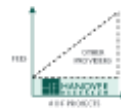
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