RESEARCH REVIEW:
Data-driven decision making in education agencies

Data Driven, *not* Data Drowning[1]

Being driven by data requires more than the existence of a data infrastructure, accessible data, and a culture of data use. It also requires careful attention that data are both relevant and diagnostic for each decision maker and decision. Meaningful use of data begins with who will access, analyze, or review the data and for what purpose. The figure below displays several examples of purposes that education decision makers have for using data.

Who will access, analyze, or review the data	For what purposes
Classroom teachers	• Assessing the needs, strengths, progress, and performance of students • Developing and revising classroom instruction • Understanding professional strengths and weaknesses
School administrators	• Assessing the needs, strengths, progress, and performance of staff and students • Developing and revising school plans, targets, and goals • Monitoring the implementation and impact of school practices, programs, and policies
Superintendents, school boards, district staff, charter management organization leaders, charter authorizers	• Assessing the needs, strengths, progress, and performance of schools, staff, and students • Developing and revising district curricula, standards, plans, targets, and goals • Monitoring the implementation and impact of district practices, programs, and policies
State education agency officials	• Monitoring statewide achievement and attainment levels, overall and for subgroups, statewide and by school/district • Monitoring and reporting measures of school performance • Measuring teacher effectiveness • Monitoring human capital pipeline • Evaluating program implementation and impacts • Developing and revising state standards, curricula, and goals

[1]The information presented in this infographic is presented in more detail at https://www.mathematica-mpr.com/our-publications-and-findings/publications/a-conceptual-framework-for-data-driven-decision-making.

https://ies.ed.gov/ncee/edlabs/regions/midatlantic/

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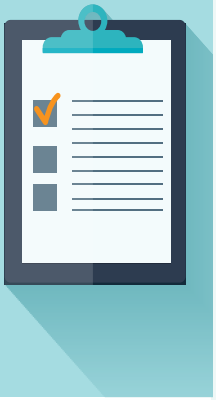
What's so important about data that is relevant and diagnostic?

Data must be *relevant* to the decision maker in order to guide the improvement of practice or outcomes. Its relevance may depend, for example, on whether data are related to students, staff, or programs or on how frequently data are updated and delivered.

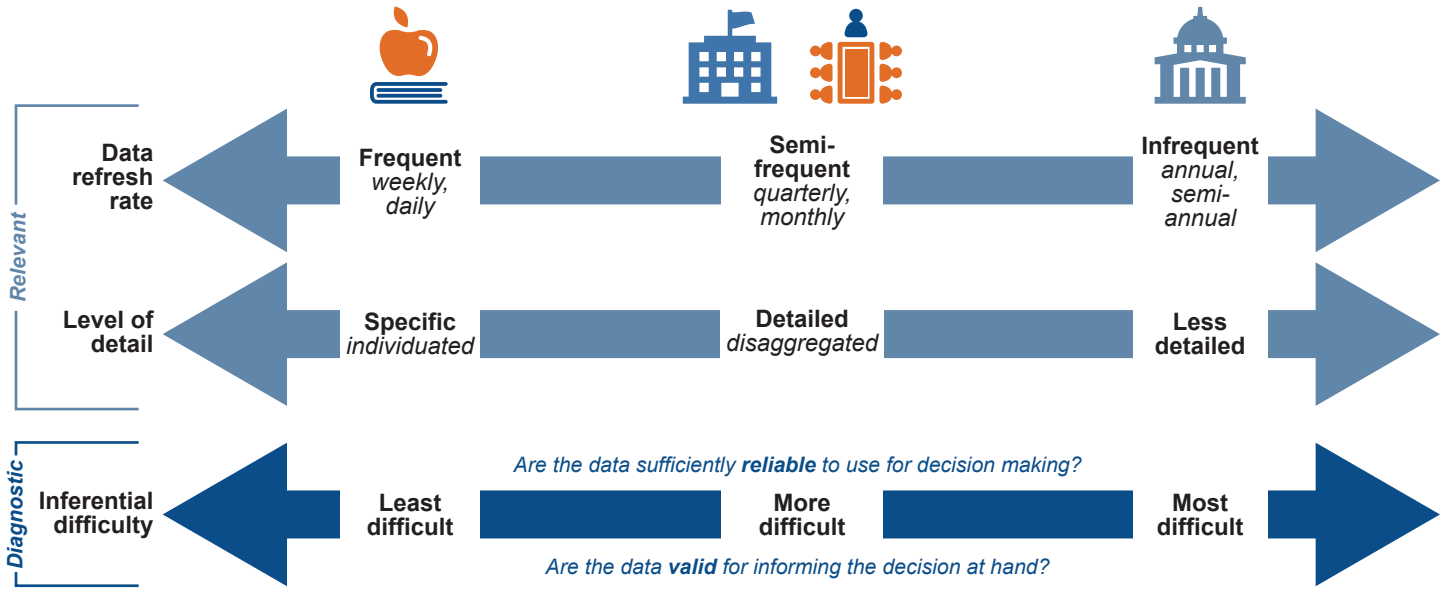
Data also must be *diagnostic* for the issue at hand, which means it must be *reliable* and *valid* (see text boxes). The same data can be diagnostic for some decisions and not for others. Schoolwide student growth, for example, might be diagnostic for identifying a high-performing school, but by itself has limited use for identifying why the school is high performing.

Reliable measures do not show big, random changes up or down. If a school's performance is in the top 10 percent one year and the bottom 10 percent the next, the measure is probably unreliable.

Even when data are reliable, they may not be ***valid*** for informing the decision at hand. Validity depends on the purpose for which data are used. Schoolwide standardized test scores may be valid measures of average student achievement levels, but may be misleading measures of principal performance (if, for example, a principal is new to the school).



Correct diagnosis can become increasingly challenging at higher levels because the decisions require correctly identifying underlying causes—in circumstances with many possible causes. A well-designed assessment can quickly help a teacher diagnose specific skills that a particular student needs to work on. When a principal sees that an entire class isn't doing well, however, an examination of average student test scores isn't enough information to conclude that the teacher needs to do better or how to support improvement. And when a school district has a chronically low-performing school, there is an even wider range of possible explanations—including leadership, teacher quality, curriculum, external factors, and many others—that could have produced the low achievement, so diagnosing the right explanations (and subsequently designing and implementing an appropriate intervention) is even more difficult. The figure below illustrates how the level of detail, the frequency of data collection, and the difficulty of making strong inferences vary for decision makers at different levels.



This work was funded by the U.S. Department of Education's Institute of Education Sciences (IES) under contract ED-IES-17-C-0006, with REL Mid-Atlantic, administered by Mathematica Policy Research. The content does not necessarily reflect the views or policies of IES or the U.S. Department of Education, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. government.