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United States General Accounting Office  
Washington, D.C. 20548

General Government Division

B-285312

May 25, 2000

The Honorable Tillie K. Fowler  
Chairman, Subcommittee on Oversight,  
Investigations, and Emergency Management  
Committee on Transportation and Infrastructure  
House of Representatives

Subject: Managing For Results: Assessing the Quality of Program Performance Data

Dear Ms. Chairman:

On March 22, 2000, we testified at an oversight hearing that the Subcommittee held on program data quality.<sup>1</sup> This letter responds to your request for additional information in order to complete the record.

**Question: In the testimony from the agencies we heard that there will always be a degree of error in data. How would you suggest agencies determine how accurate data need to be?**

There is no easy answer to the question of how accurate performance data need to be. Accuracy—the degree to which data are free from significant error—is only one of several important elements to consider when examining the quality of agency performance data. Although certainly not exhaustive, the following key dimensions of data quality illustrate some of the different types of quality concerns that agencies consider when producing program performance data:<sup>2</sup>

**Accuracy**—the extent to which the data are free from significant error;

**Validity**—the extent to which the data adequately represent actual performance;

**Completeness**—the extent to which enough of the required data elements are collected from a sufficient portion of the target population or sample;

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<sup>1</sup> Managing for Results: Challenges in Producing Credible Performance Information (GAO/T-GGD/RCED-00-134, March 22, 2000).

<sup>2</sup> Performance Plans: Selected Approaches for Verification and Validation of Agency Performance Information (GAO/GGD-99-139, July 30, 1999).

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**Consistency**—the extent to which data are collected using the same procedures and definitions across collectors and times;

**Timeliness**—whether data about recent performance are available when needed to improve program management and report to Congress; and

**Ease of Use**—how readily intended users can access data, aided by clear data definitions, user friendly software, and easily-used access procedures.

When assessing how good data need to be, it is important to recognize that no data are perfect. In general, data need to be good enough to document performance, support decisionmaking, and respond to the needs of internal and external stakeholders. Decisions on “how good is good enough” may depend on the uses of the data and the consequences of program or policy decisions based on those data. This may involve trade-offs among the dimensions of quality described above.

For example, enhancing the completeness of a data collection effort may have a negative impact on its timeliness when data are to be obtained from a large number of independent entities. Attempts to increase the timeliness of these data by using a scientific sampling procedure to reduce the number of entities providing data would reduce the completeness of the coverage but may still provide adequate data for performance measurement. Similarly, there can be trade-offs between accuracy and timeliness, such as when an agency decides to use or report not-yet-final data rather than waiting for final figures. In this case, some accuracy may be knowingly sacrificed for the more timely preliminary data. Budgetary constraints may also play a role in determining the level of data quality along a particular quality dimension.

The key is to for agencies to be aware of the data quality limitations of the performance data, understand the trade-offs involved, and reveal and discuss in performance reports the limitations and trade-offs. Agencies may foster appropriate use of data by clearly communicating how and to what extent data limitations affect an assessment of performance. Making Congress and stakeholders aware of significant data limitations and their implications allows them to judge the data credibility for their intended use and to use the data in appropriate ways.

Determinations on how good data need to be also depend on other factors, such as the type of measure being used and the amount of change expected in the data. Different types of performance data may require different levels of accuracy. For example, audits of financial data, opinion surveys, and assessments of air pollution in environmental measures may all require different levels of accuracy. Within these areas, professional judgement plays a role in determining acceptable error levels. Data standards can also be influenced by the expectations of people using the performance information. If the amount of error present in performance data is not significantly less than the amount of desired change that is targeted for that measure, it is impossible to determine whether the change is due to error or an actual change in performance.

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Developing standards for key dimensions of data quality, such as accuracy, validity, consistency, and timeliness, is a matter for individual agency analysis and determination, taking into account, among other things, (1) the views of the users of the data (internal and external stakeholders) and (2) relevant professional standards and technical advice.

Current users of performance data may have valuable experience with the strengths and weaknesses of existing data; therefore, they can provide insights into the data credibility with external audiences. For example, the Environmental Protection Agency (EPA) seeks stakeholder feedback on the quality of its performance data in several different ways, including consulting with customers, posting feedback forms on its Internet site, and requesting both users and providers to verify data. To obtain “customer” feedback, EPA’s Center for Environmental Information and Statistics has conducted meetings with national, regional, state, and local environmental users to ask what information they need and how they would like to access it. As part of this process, the participants expressed concerns with the accuracy of data entry, transmittal, and agency reporting.

Professional standards provide another tool for agencies working to determine the appropriate level of data quality for their performance measures. Several agencies have formed groups to develop or apply data quality standards. Among these is EPA’s Science Advisory Board, established to provide independent scientific and technical advice to the EPA Administrator, conducts reviews to determine whether performance data are of sufficient quality to support environmental measures. The Department of Education has also worked to use professional standards in setting and evaluating the quality of performance data. When Education developed a set of draft standards for use in evaluating the quality of performance measures, it had the draft standards intensively reviewed by the Department’s Evaluation Review Panel, a group of external evaluation experts from academia and state agencies.

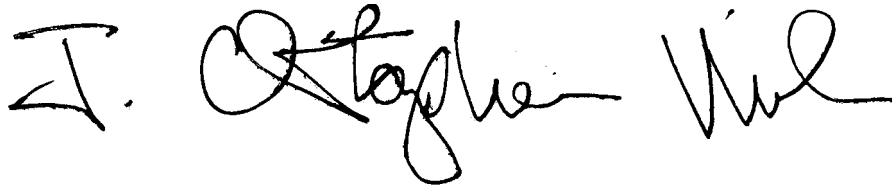
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Because this response is primarily based on our previously issued reports and testimonies, we did not seek agency comment on a draft of this letter. We are sending a copy of this letter to the Honorable James A. Trafficant, Jr., Ranking Democratic Member, Subcommittee on Oversight, Investigations, and Emergency Management, House Committee on Transportation and Infrastructure. We will make copies available to others upon request.

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If you or your staff have any questions concerning this letter, or if you need additional information, please contact me on (202) 512-8676.

Sincerely yours,

A handwritten signature in black ink, appearing to read "J. Christopher Mihm". The signature is written in a cursive style with a large initial "J" and a prominent "M".

J. Christopher Mihm  
Associate Director, Federal Management and  
Workforce Issues

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