What's Happening

Benchmarking the state of Pohnpei's education management information system

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Key findings

Data specialists in the state of Pohnpei in the Federated States of Micronesia assessed the quality of their education management information system using a rubric with four benchmark levels that rated five aspects of system quality with 46 indicators. The four benchmark levels were latent (not in place), emerging (in the process of implementation), established (in place and meeting standards), and mature (an example of best practice). The overall system was rated as established. Each of the five aspects of system quality also received that rating:

- Prerequisites of quality.
- Integrity of education statistics.
- Accuracy and reliability of education statistics.
- Serviceability.
- Accessibility of data to stakeholders.

The report also provides the scores for the 46 indicators that were used to calculate the benchmark level of the system overall and the five aspects of quality.

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This report is available on the Regional Educational Laboratory website at http://ies.ed.gov/ncee/edlabs.

Summary

A quality data management system, such as an education management information system (EMIS), a state longitudinal data system, or a data warehouse, is key to ensuring that education policy, planning, and strategy decisions are grounded in accurate information (Data Quality Campaign, 2010; Mohamed, Kadir, May-Lin, Rahman, & Arshad, 2009; Regional Educational Laboratory Southeast, 2010; World Bank, 2011). The chief state school officers of the Federated States of Micronesia have recognized the need to improve their national EMIS and those of their four states, especially the organization of data and timeliness of data reports (Federated States of Micronesia, 2009).

For this study, Regional Educational Laboratory (REL) Pacific assessed the EMIS in the state of Pohnpei by convening a focus group of data specialists to rate the processes, tools, and materials that support the ability to provide timely and meaningful data to schools or education agencies. They used a tool developed by the World Bank to objectively assess and monitor the quality of EMISs. The tool assesses five major aspects of quality: prerequisites of quality, integrity of education statistics, accuracy and reliability of education statistics, serviceability (relevance, timeliness, and consistency of data), and accessibility of data to stakeholders. Scores from the data specialists were averaged and used to assign each aspect of quality to one of four benchmark levels: latent (not in place), emerging (in the process of implementation), established (in place and meeting standards), and mature (an example of best practice).

The results of this study provide a comprehensive view of Pohnpei's EMIS, which was rated as established overall and for each of the five aspects of quality:
- Prerequisites of quality (the institutional frameworks that govern the information system and data reporting and the supporting resources).
- Integrity of education statistics (the professionalism, objectivity, transparency, and ethical standards by which staff operate and statistics are reported).
- Accuracy and reliability of education statistics.
- Serviceability (relevance, timeliness, and consistency of data).
- Accessibility of data to stakeholders.

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Why this study?

The chief state school officers in the Federated States of Micronesia have called for improving the education management information system (EMIS) nationally and in the country's four states (Chuuk, Kosrae, Pohnpei, and Yap), especially in the collection and organization of data and the timeliness of data reports (Federated States of Micronesia, 2009). An EMIS encompasses all elements related to the collection, storage, and processing of data to formulate, manage, and evaluate education management policies. A 2010 audit by the Federated States of Micronesia National Department of Education underscored the need for better data communication systems—the networking, delivery, and reporting of data within the national department and between it and the states. The audit also recommended that the national and state departments of education improve the uniformity and accuracy of data collection (Wrembeck & Fenlon, 2010).

In Pohnpei, as well as in the other states, education data are critical for demonstrating compliance with programmatic and grant funding requirements. A 2011 grant award to the Federated States of Micronesia's education sector from the U.S. Department of the Interior required that the country develop a comprehensive strategy to improve centralized data collection and analysis (Joint Economic Management Committee, 2010, Resolution 2010–6; U.S. Department of the Interior, 2010). The Joint Economic Management Committee, which oversees the allocation and use of funds from the U.S. Department of the Interior's Office of Insular Affairs Compact, has the authority to withhold funds from the national or state departments of education if it determines that system performance or improvement is unsatisfactory.

In Pohnpei, as well as in the other states in the Federated States of Micronesia, education data are critical for demonstrating compliance with programmatic and grant funding requirements

The performance measures established for the Federated States of Micronesia's EMIS were initially created in response to a 2004 Joint Economic Management Committee resolution that called for developing appropriate performance measures "for all sectors with baseline data that are consistent over time, verifiable, understandable and easy to report and monitor" (Joint Economic Management Committee, 2004, pp. 9–10; see appendix A for a review of the literature on EMISs). Since 2005 the Joint Economic Management Committee has required the Federated States of Micronesia National Department of Education to submit an annual report summarizing data across the Federated States of Micronesia's four states on 21 education indicators. (The original number of indicators was 20; one was added in 2011 based on an Office of Insular Affairs recommendation to include reporting on scholarship data; see Federated States of Micronesia, 2013.) However, the most recent audit, contracted by the National Department of Education in 2010, noted that no formal data collection or verification policies or procedures were in place at the national or state levels, suggesting a need to establish minimum standards to strengthen data management, collection, and verification. The audit recommended that the National Department of Education "implement a standardized data information collection system across all education departments to allow for uniformity and accuracy of data collection" (Wrembeck & Fenlon, 2010, p. 11).

It is in this context that Regional Educational Laboratory (REL) Pacific undertook this assessment of the quality of Pohnpei's EMIS. The findings will inform a plan of action with specific and measurable goals to improve the system over the near and long terms. This study complements an effort by the Federated States of Micronesia's National Department of Education to satisfy the requirements of the Joint Economic Management Committee

resolution. Assessment and benchmarking of the EMISs in the three other states—Chuuk, Kosrae, and Yap—have been conducted using the same protocol, and the results will be available in separate reports.[1] REL Pacific will also produce a summary report that explores the similarities and differences in the quality of EMISs across all four states.

What the study examined

To examine the quality of Pohnpei's EMIS, REL Pacific convened a focus group of five Pohnpei data specialists. During a one-day session in June 2014, they discussed and rated the processes, tools, and materials they use to collect, analyze, and report education data to provide timely and meaningful information to schools and education agencies (see box 1 and appendix B for data sources and methods). These data specialists—nominated by the Pohnpei director of education for their familiarity with the state's data system—included an information and communications technology/data management specialist, a testing specialist, a data specialist, a representative from special education, and an individual whose work includes managing data for the school improvement program. Although just five data specialists provided information for this study, they were the specialists with the most knowledge of the day-to-day operations of data collection, statistical analysis, and report dissemination for the state of Pohnpei's relatively small education department, which comprises 136 staff and 543 teachers.

Regional Educational Laboratory Pacific adapted a tool developed by the World Bank and convened a focus group of five Pohnpei data specialists to examine the quality of Pohnpei's education management information system

To examine the quality of Pohnpei's EMIS, REL Pacific adapted a tool developed by the World Bank that allows identification of the characteristics of an EMIS and comparison of systems within a country over time or across countries (see box 2 and appendix B). The System Assessment and Benchmarking for Education Results (SABER) EMIS Assessment Tool covers five aspects of quality of the EMIS and provided a benchmark system to rate its strengths and weaknesses (see box 2 and appendix C).

The five aspects of quality are prerequisites of quality (including the legal and institutional environment and whether human and material resources are adequate for the task), integrity of education statistics (including whether statistical policies and practices are guided by professional principles, whether they are transparent, and whether they are guided by ethical standards), accuracy and reliability of education statistics, serviceability (relevance, timeliness, and consistency), and accessibility (education statistics are made available in clear and understandable ways to stakeholders).

Aspects of quality are rated at one of four benchmark levels: latent (not in place), emerging (in the process of implementation), established (in place and meeting standards), and mature (an example of best practice); (table 1). The protocol was revised slightly to make it more relevant to this study (see box 2).

Box 1. Data sources and methods

Data sources. The data for this study are based on five data specialists' responses to questions related to 46 indicators covering five aspects of the quality of Pohnpei's education management information system (EMIS; see box 2). Each question was developed by Regional Educational Laboratory Pacific to help focus discussion on an indicator of system quality from the World Bank's System Assessment and Benchmarking for Education Results (SABER) EMIS Assessment Tool.

Data collection. Each data specialist received a printed copy of the indicators and related questions, scoring rubric, and accompanying explanatory text before a focus group discussion (see appendix B). Data specialists also had the opportunity to consider the questions in advance and to bring any evidence—regulations, logs, forms, and other artifacts—that supported their perspective on how the indicators should be rated. After the facilitator presented each question, data specialists discussed it, and each rated the rubric on a five-point scale. Unanimity of response was not required. Data specialists were asked to review documentation of their responses and confirm that their expressed views were accurately reflected.

Methodology and analysis. The responses for each indicator were analyzed using descriptive statistics, identifying the high, low, and average scores of the data specialists. The related indicator scores were averaged to obtain scores for the five aspects of quality (see box 2). The scores for each aspect were assigned the appropriate benchmark level: latent, emerging, established, or mature (see table 1 for a description of the levels). The aspect scores were then averaged to obtain an overall score.

Box 2. The revised System Assessment and Benchmarking for Education Results Education Management Information System Assessment Tool

The indicators and scoring guidelines used in this study were developed by the World Bank (2011) as part of the System Assessment and Benchmarking for Education Results (SABER) Education Management Information System (EMIS) Assessment Tool. Built from an International Monetary Fund framework to compare scores across countries, the tool was developed to assess and monitor EMISs on specific aspects of quality. The study team added a focusing question for each indicator to help guide the group discussions and dropped one aspect of quality measured by the tool (methodological soundness) because its focus on international standards did not align to this study's purpose of comparing data across the Federated States of Micronesia (for a discussion, see appendix B). The revised tool examined five aspects of quality by scoring 7–11 indicators under each aspect (46 indicators in all). Based on those scores, each indicator, each aspect, and the overall system were then assigned to one of four benchmark levels.

Five aspects of quality. The five aspects of quality measured by the revised SABER EMIS Assessment Tool are:

1. Prerequisites of quality. Assesses whether the institutional frameworks that govern the information systems and data reporting and the supporting resources are available and adequate. This aspect has two subsections: the legal and institutional environment and whether human and material resources are adequate for the task. (11 indicators)

(continued)

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2. Integrity of education statistics. Assesses whether the professionalism, objectivity, transparency, and ethical standards by which data staff operate and by which the data and statistics are reported are adequate. This aspect has three subsections: whether statistical policies and practices are guided by professional principles, whether statistical policies and practices are transparent, and whether policies and practices in education statistics are guided by ethical standards. (Nine indicators)
3. Accuracy and reliability of education statistics. Assesses whether the data and statistical techniques are sound and whether statistical reports reflect reality. (10 indicators)
4. Serviceability (relevance, timeliness, and consistency). Assesses whether the data being collected and the education statistics being generated are relevant and available to inform policy and practice decisions and are consistent over time to measure progress. (Seven indicators)
5. Accessibility. Assesses whether the education statistics (and their underlying metadata) are made available in clear and understandable ways to stakeholders. (Nine indicators)

Indicators. Each indicator focuses on a specific characteristic of an aspect of quality; for example, one indicator under the serviceability aspect concerns whether statistics are released on a pre-announced schedule. Indicators are supplemented with a focusing question and clarifying statements ranging from a few sentences to several paragraphs that provide examples or context for the indicator. Indicators for aspects 1 and 2 are organized under subsections; indicators under aspects 3–5 are organized directly under their aspects (see appendix C). The question for each indicator in the focus group protocol can be answered on a five-point scale from 0 to 1.

Benchmark levels. The score for each indicator can be placed within the range of scores that defines one of the four benchmark levels: latent, emerging, established, and mature (see table 1 in the main text for descriptions of the benchmark levels and the score ranges; see table B1 in appendix B for the score level for each aspect of quality). The scores for each indicator within an aspect of quality were averaged across data specialists to provide a sense of relative strengths and weaknesses within the aspect. The indicator scores were then averaged and used to assign the aspect to a benchmark level. The overall score for the EMIS was calculated by averaging the scores for all five aspects and assigning it to the applicable benchmark level. For graphs of the average scores by indicator and aspect, see appendix D.

Table 1. Descriptions of benchmark levels for indicator scores and overall score range for aspects of quality

Benchmark level	Description	Indicator score	Aspect of quality and overall score range
Latent	The process or action required to improve the aspect of quality is not in place	.00	.00–.30
Emerging	The process or action is in the process of implementation	.25 and .50	.31–.59
Established	The process or action is in place and it meets standards	.75	.60–.79
Mature	The process or action is an example of best practice	1.00	.80–1.00

Source: Adapted from World Bank (2011), pp. 40 and 46.

What the study found

Data specialists in the Federated States of Micronesia state of Pohnpei rated the state's EMIS overall as established, the second highest level, meaning that it meets standards. All five aspects of quality were also rated as established.

Pohnpei's education management information system overall was rated as established

Data specialists rated Pohnpei's EMIS overall as established, based on a simple average of aggregate scores for all five aspects of quality (the average score was .67 and the established benchmark range is .60–.79; figure 1). The SABER EMIS Assessment Tool describes the established benchmark level for the overall system as:

> Stable channels of data collection and production. There is a clear strategy and investment in data and statistics. More varied sources of data including sample-based surveys. Some emerging policy issues are addressed in terms of measurement. Regional and international comparisons are frequently cited (World Bank, 2011, p. 48).

Each of the five EMIS quality aspects was rated as established, indicating that all aspects are in place and meet standards. The average score for the prerequisites of quality aspect, which concerns the institutional frameworks that govern the systems and data reporting and the availability and adequacy of supporting resources, was .72 across 11 indicators. The average score for the integrity of education statistics aspect was .60 (due to rounding) across nine indicators. Data specialists rated their system's accuracy and reliability as established, with an average score of .64 across 10 indicators. The most highly rated aspect was serviceability, which was rated an average of .74 across seven indicators. Accessibility of the data was rated at an average of .65 across nine indicators.

The scores assigned by data specialists to each indicator are discussed by aspect of quality in the following sections, with a focus on indicators that received the highest and lowest scores and a discussion of how the average score of indicators for each aspect is characterized within the revised SABER EMIS Assessment Tool. See appendix D for the range of individual scores for these indicators by aspect.

Figure 1. Pohnpei's education management information system overall was rated as established, and its highest-rated aspect was the relevance, timeliness, and consistency of data, 2014
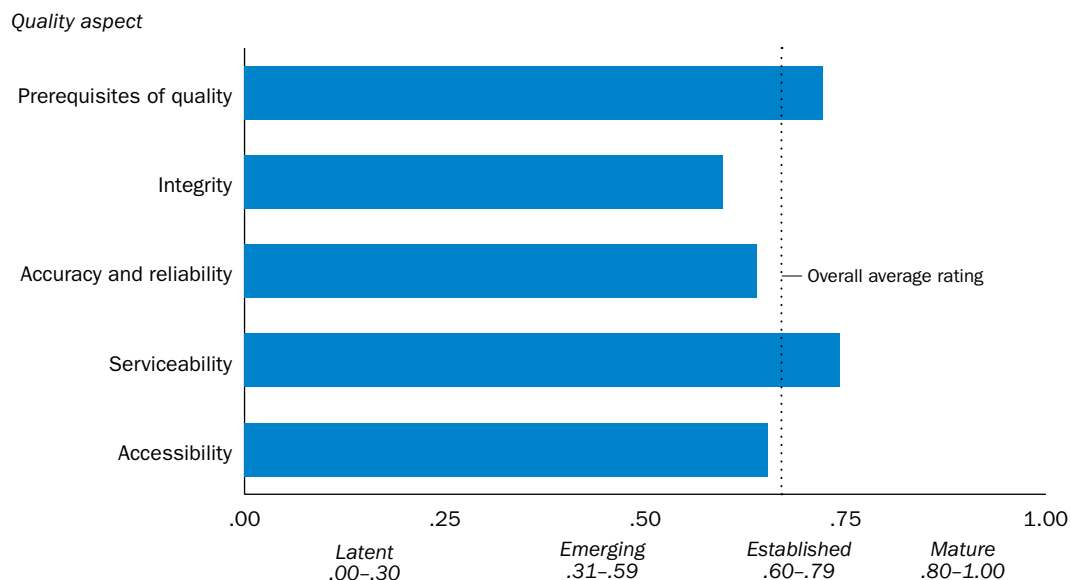
Quality aspect

Both subsections of the prerequisites of quality aspect (legal and institutional environment and whether human and material resources are adequate for the task) were rated as established

Source: Authors' calculations based on participant responses to the revised System Assessment and Benchmarking for Education Results focus group protocol in 2014.

The prerequisites of quality aspect was rated as established

Data specialists rated the prerequisites of quality aspect as established, with an average score of .72 (see figure D1 in appendix D). The SABER EMIS Assessment Tool describes the established benchmark level for this aspect as:

> Data sharing and coordination in place; confidentiality assured; legal framework indirectly in place through the legal mandate of the census agency; more efficiency in resource use is needed; users' needs assessed but infrequently; data quality processes in place but enforcement needs improvement. (World Bank, 2011, p. 46).

The prerequisites of quality aspect includes 11 indicators in two subsections: legal and institutional environment and whether human and material resources are adequate for the task. For each subsection the average score was in the established benchmark range of .60–.79 (.67 for legal and institutional environment and .75 for human and material resources). For the subsection on legal and institutional environment, the indicator on data sharing and coordination among different agencies was rated highest (.88), placing it into the mature benchmark range of .80–1.00. Within this subsection, the two lowest rated indicators were both rated at .50, placing them in the emerging benchmark range of .31–.59. The first indicator asked whether the responsibility for collecting, processing, and disseminating statistics is clearly specified; the second asked whether there is a legal mandate that ensures that individuals give their response to statistical or survey questions. For the subsection on human and material resources, the indicator related to process monitoring was rated highest—both within this subsection aspect and across all aspects of quality of the protocol. Specifically, data specialists each assigned a 1.00 (at the top of the mature benchmark range) to the indicator on whether processes are in place to monitor

the quality of the collection, processing, and dissemination of statistics. The lowest rated indicator in this subsection (.50, emerging) addressed whether processes and procedures are in place to ensure that resources are used efficiently.

The integrity of education statistics aspect was also rated as established

Data specialists rated the integrity of education statistics aspect as established, with an average score of .60 (.597) (see figure D2 in appendix D). The SABER EMIS Assessment Tool describes the established benchmark level for this aspect as:

> Statistics are impartial; professionalism of the staff is promoted; errors in statistics are corrected regularly; statistics have institutional backing but chain of responsibility is unclear; major changes in methods, source data and techniques are made public and guidelines for staff behavior are in place, but need revisions or improvements. (World Bank, 2011, p. 47)

Two of the subsections in the integrity of education statistics aspect were rated as emerging, and one was rated as established

The integrity of education statistics aspect includes nine indicators in three subsections: whether statistical policies and practices are guided by professional principles, whether they are transparent, and whether they are guided by ethical standards.

Whether statistical policies and practices are guided by professional principals was rated as emerging—just .01 of a point below established—with an average score of .59. The indicator that addresses whether the choices of data sources and statistical techniques are made solely by statistical considerations received the highest rating (.81, mature) in this section. The lowest rating—at the emerging level (.38)—was for the indicator that asks whether statistics are impartial; that is, whether impartiality is ensured because the terms and conditions under which the statistics are produced guarantee the professional independence of the agency.

Whether statistical policies and practices are transparent was rated as emerging, with an average score of .56. The notice the system provides of major changes in methodology, source data, and statistical techniques was rated as .88, in the mature range. The indicator that addresses whether the terms and conditions under which statistics are collected, processed, and disseminated are available to the public received the lowest rating (latent, .25). The majority of data specialists believed that information is difficult to find although available upon request.

Finally, whether ethical standards guide statistical techniques and decisions about dissemination was rated as established. The average score for this subsection's single indicator—whether guidelines for staff behavior are in place and are well known to staff—was .75.

The accuracy and reliability of education statistics aspect was rated as established

Data specialists rated the accuracy and reliability aspect as established, with an average score of .64 (see figure D3 in appendix D). The SABER EMIS Assessment Tool describes the established benchmark level for this aspect as:

> Source data are assessed regularly; source data come from comprehensive data collection tailored to the country's condition; the compilation of source data follow[s]

international standards; intermediate results are validated with other data sources if discrepancies are easily noted; statistical discrepancies are investigated and corrected regularly (World Bank, 2011, p. 47).

The accuracy and reliability aspect comprises 10 indicators. One indicator—which addresses whether data are reasonably confined to the definitions, scope, classifications, and time of recording required—was rated as mature (at .90). The majority of indicators were rated as established, averaging .67; only three indicators were rated as emerging—whether other data sources, such as surveys, are routinely assessed; whether statistical procedures, such as data editing, employ sound statistical techniques (both scored at .45); and whether studies and analyses of revisions are routinely carried out (.55).

The serviceability aspect was also rated as established

Data specialists rated the serviceability aspect as established, with a score of .74 (see figure D4 in appendix D). The SABER EMIS Assessment Tool describes the established benchmark level for this aspect as:

> Statistics are published at regular intervals and their timeliness is consistent with international standards; statistics are consistent within the data set and with other data sources; revisions are regular but preliminary data are not always identified (World Bank, 2011, p. 48).

The serviceability aspect concerns whether education statistics are relevant, delivered in a timely manner, and consistent. This aspect also encompasses any revision policies that may affect the relevance, timeliness, or consistency of statistics. The highest rated (mature, 1.00) indicator was for the regularly scheduled dissemination of education statistics. An indicator on whether revisions follow a regular and transparent schedule received the lowest scores for this aspect (emerging, .50).

The accessibility of data to stakeholders aspect was rated as established

Data specialists rated the accessibility of data to stakeholders aspect as established, with an average score of .65 (see figure D5 in appendix D). The SABER EMIS Assessment Tool describes the established benchmark level for this aspect as:

> The presentation of statistics is adequate for their interpretation; dissemination is adequate but may benefit from including online media; documentation is good; level of detail conforms to user needs, but there is no list of publications available to users (World Bank, 2011, p. 48).

This aspect addresses whether the statistics that the department of education makes available are clear and understandable to users and stakeholders. The highest scores (in the mature range) were for presentation of statistics to facilitate understanding (.88) and the release of statistics on a pre-announced schedule (.82). The indicator on whether catalogs of publications and other services are widely available received the lowest score (latent, .19). This score was the lowest average assigned to any of the 46 indicators.

Implications of the study

The results of this study provide the Pohnpei State Department of Education and the Federated States of Micronesia National Department of Education with information regarding the strengths of the Pohnpei EMIS and the weaknesses that may benefit from immediate and focused improvement efforts. As noted, REL Pacific is also conducting studies on the EMISs in Chuuk, Kosrae, and Yap and will publish the findings in separate reports along with a summary report that synthesizes the findings for all four states. These companion reports are intended to allow for further comparison of strengths, areas for improvement, and possible next steps that might be applied consistently across states.

The data specialists rated Pohnpei's EMIS as established—meeting standards—on each aspect of quality. Of these generally favorable ratings, integrity of education statistics was rated lowest and serviceability highest among the aspects. The implications of these findings become clearer at the indicator level.

Pohnpei's education management information system appears to lack defined roles and responsibilities for data specialists to validate data and generate statistical reports

Under prerequisites of quality, indicators that asked whether the responsibility for collecting, processing, and disseminating statistics is clearly specified and whether a legal mandate ensures that individuals respond to survey questions received the lowest scores. Those ratings, combined with the established ratings data specialists awarded their system for accuracy and reliability, imply that although data specialists know and can apply the sound techniques necessary to validate data and generate statistical reports, the system does not ensure that their roles and responsibilities are defined, nor does it ensure that a legal mandate will require that they receive the data they need. This rating comports with, and may help clarify, findings from the Federated States of Micronesia National Department of Education audit (Wrembeck & Fenlon, 2010) that collection and processing of data need improvement.

The established rating for the aspect of accuracy and reliability of education statistics includes timeliness of the data services that support policy planning and policy evaluation by ensuring the relevance of education statistics. Data specialists in Pohnpei provide many services to local stakeholders; thus their rating on this aspect reflects their view of the timeliness of services provided at both the state and national levels. This fact may account for an apparent discrepancy between the established rating assigned to this aspect contrasted with the Federated States of Micronesia National Department of Education's 2010 audit that indicates a concern regarding the timeliness of reporting from the states.

The integrity of education statistics received a low score, suggesting that those services are not problem free. Specifically, the system does not adequately inform the public of the terms and conditions under which the statistics are collected and processed, nor does it adequately guarantee the professional independence of the agency.

Finally, accessibility—whether statistics are made available and clear to stakeholders —was rated among the highest across all aspects, but an indicator regarding the availability of catalogs of publications and services for the public received the lowest indicator score of any aspect, indicating that although statistical reports may be easy to interpret, they could be hard to find.

The research literature suggests that core characteristics of the EMIS—including the collecting, integrating, and organizing of data and statistics—will be strengthened by establishing clear roles and responsibilities so that data specialists receive the data they require to provide timely reports. Clarification of those roles and, more broadly, development of standardized data collection and verification policies and procedures require the coordinated efforts of state and national leaders. Such "coordination and collaboration at all levels in the education system" is another essential characteristic of an effective EMIS (Cassidy, 2006, p. 17).

Data specialists in Pohnpei have recognized all evaluated aspects of their EMIS as established. The data specialists' ratings should help focus efforts to improve system quality. The findings may be used to support further development of system performance measures as recommended by the Joint Economic Management Committee by acting as baseline data for all sectors of the EMIS or by suggesting areas of investigation. For example, Pohnpei's data specialists may want to investigate whether the noted lack of clear legal authority to collect data causes delays as they attempt to gather information for analysis and reporting. By focusing on those areas within each aspect that were rated comparatively low, data specialists may find opportunities to strengthen the value and timeliness of the data and statistics they provide their stakeholders—whether policymakers or school districts.

Data specialists may want to investigate whether the noted lack of clear legal authority to collect data causes delays as they attempt to gather information for analysis and reporting

Limitations of the study

A key limitation to the study is that the protocol depended on the cooperation of Pohnpei State Department of Education representatives and the insights of the data specialists and department officials. Documentation of the EMIS (and the education system as a whole) is not formally catalogued and is rarely publicly available, thus limiting accessibility and independent review. The study team was limited to the documentation and evidence provided in the focus groups by Pohnpei data specialists to support their scores for the indicators.

Allowing only five data specialists in the focus group session might be considered another limitation; however, the data management function in the Pohnpei State Department of Education is supported by a very small team, and all management positions related to data collection, analysis, and dissemination for the department's agencies were represented in the focus group.

The study team logged the responses of the data specialists and worked with them to identify the supporting documentation referenced during the focus group sessions. As a qualitative protocol, however, the assessment of many indicators relied heavily on the self-reported perceptions and opinions of Pohnpei State Department of Education officials and data specialists. The focus group format provided an opportunity for the data specialists to learn each other's perceptions and viewpoints as well as to review any materials their colleagues offered in support of a score, but the effect that peer pressure might have had on participant responses is unknown. Given the disparity of responses to some protocol items, this did not seem to be a limitation of the study.

Another limitation of this study is that the psychometric properties of the SABER EMIS Assessment Tool are unknown, although World Bank researchers have indicated positive results for consistency across assessors and participants in six island nations in the Caribbean (World Bank, 2011). However, the specific inter-rater reliability measures from

this study are unknown. An initial study by McREL International using the same assessment framework at the Federated States of Micronesia National Department of Education showed consistency in scores across focus group participants. The tool is designed to promote discussions among those engaged in the daily work of operating the state EMIS as they consider its value and the quality of various system quality aspects, and then document the various viewpoints and perceptions using quantitative scoring scales. Because scores reflect the perspectives of the individuals interviewed, they are not an objective view of the EMIS quality.

A final limitation is that respondents might have offered biased responses because they worked with different parts of the Pohnpei EMIS and were therefore more familiar with some system issues than with others. The focus group format and the use of a transparent protocol were designed to mitigate individual biases. However, the focus group format itself has the potential for biasing responses because individual confidentiality cannot be guaranteed, especially in a small group.

Appendix A. Literature review of education management information systems

Education management information systems (EMISs) are designed to provide comprehensive, integrated, relevant, reliable, unambiguous, and timely data to education leaders, decisionmakers, planners, and managers. More simply, an EMIS should provide "the right people with the right information at the right time to make best decisions, planning and monitoring in the best interest of the organization" (Bhatti & Adnan, 2010, p. 1). The quality of any data management system (for example, an EMIS, a state longitudinal data system, or a data warehouse) is key to ensuring that education policy, planning, and strategy decisions are grounded in accurate data (Data Quality Campaign, 2010; Mohamed, Kadir, May-Lin, Rahman, & Arshad, 2009; Regional Educational Laboratory Southeast, 2010; World Bank, 2011). Assessing and benchmarking a data management system can also provide policymakers with the opportunity "to gauge…how its education system compares to other systems internationally" (Abdul-Hamid, 2014, p. 14).

EMISs are seen as a "primary mechanism for monitoring progress and for fostering accountability" as education systems move from concern about education coverage to concerns about education quality (World Bank, 2011, p. 3). Accurate and reliable information is essential to inform policy planning and evaluation (Hua & Herstein, 2003; World Bank, 2011). For example, in Jamaica, the EMIS helped inform policy briefs related to school attendance, teacher qualifications, and test performance (Cassidy, 2006). The cost of improving data quality is usually less than the cost of making decisions based on bad information (World Bank, 2011). To gauge the quality of an EMIS, it is essential to understand whether the system meets key standards for consistency and completeness (Mohamed et al., 2009).

The U.S. Department of the Interior required in 2011 that the Federated States of Micronesia develop a comprehensive strategy to improve its common centralized data collection and analysis (U.S. Department of the Interior, 2010) and reflected this requirement as Joint Economic Management Committee (JEMCO) Resolution 2010–6 (Joint Economic Management Committee, 2010). This literature review lists previous audits, reviews, and assessments of Federated States of Micronesia data systems and discusses the literature on key elements of an effective data system and challenges for effectively developing or maintaining a data system. The review demonstrates the need for the current study.

Prior literature related to education management information systems in the Federated States of Micronesia

In the Federated States of Micronesia, improving the quality of data and the rigor of education data systems is a central issue (Levine, 2010; U.S. Government Accountability Office, 2006, 2013). The lack of complete, reliable, consistent, and high-quality data impedes effective analysis and education reform (U.S. Government Accountability Office, 2013). The country's chief state school officers have indicated a need for improvement in the timeliness of data reporting from states to the Federated States of Micronesia National Department of Education (NDOE) as well as a need to fully implement a comprehensive data delivery system (Federated States of Micronesia, 2009). In three annual education indicators reports to JEMCO, NDOE articulated challenges to timely data submission and data verification (Federated States of Micronesia, 2012, 2013, 2014). The department's most

recent audit, conducted more than five years ago (Wrembeck & Fenlon, 2010), noted that no formal data collection or verification policies or procedures existed at the national or state levels, suggesting a need to establish minimum standards to strengthen data management, collection, and verification. The audit recommended that NDOE "implement a standardized data information collection system across all education departments to allow for uniformity and accuracy of data collection" (Wrembeck & Fenlon, 2010, p. 11).

A 2014 study examined NDOE's EMIS using the System Assessment and Benchmarking for Education Results (SABER) EMIS Assessment Tool, which rates six aspects of quality using four benchmark score ranges. No aspect of system quality was ranked as one of the two highest benchmark levels (mature and established). Accuracy and reliability of education statistics was the highest-rated aspect (at the emerging benchmark level), and methodological soundness was rated lowest (at the latent level; Cicchinelli & Spencer, 2014). A slightly revised version of the SABER tool was used for the current study and the other three states (Chuuk, Kosrae, and Yap); findings for those states will be published in separate reports.

Key elements of an effective data system

Several common elements define an effective and comprehensive data system. The management functions of an EMIS include collecting, storing, integrating, processing, organizing, and disseminating education data and statistics in a timely and reliable fashion (Hua & Herstein, 2003). Accuracy and consideration of the "relevance of education data and education statistics" are also key elements (World Bank, 2011, p. 5).

The Data Quality Campaign, a nonprofit advocacy organization that provides tools, resources and guidance on data use to policymakers, outlines 10 essential elements of a healthy longitudinal data system. These elements include use of unique student identifiers that enable data to be linked over time and across different databases, a teacher identifier system to link student and teacher data, capacity to link preK–12 and higher education student records, and a data audit system to help ensure accuracy and quality (Data Quality Campaign, 2013). The 10 essential elements are referenced throughout the literature and help to define the framework for a comprehensive data system.

Integration or centralization of disparate data systems, applications, and information is another core element of an EMIS (Cassidy, 2006; LaPointe et al., 2009). Overall, "the development and maintenance of an integrated EMIS requires a high degree of coordination and collaboration at all levels in the education system, as well as with other ministries and with external agencies" (Cassidy, 2006, p. 17).

Integrity of education statistics is another core element. In the manual for administration of the SABER EMIS Assessment Tool, the World Bank identifies integrity as crucial to ensuring that the general public can trust education data—and trust that the data are not swayed or influenced by political forces (World Bank, 2011).

The SABER EMIS Assessment Tool prerequisites of quality aspect, which includes both the legal and institutional environment and the availability and adequacy of resources, articulates the importance of cultivating the knowledge and skills around the use of data (Cassidy, 2006). Establishing a clear understanding of who is responsible for various

activities of collecting education data is also central (Powell & Trucano, 2006) as are the "organizational processes and institutional incentives that drive information use" (Crouch, Enache, & Supanc, 2001, p. 49).

Another key element of an EMIS is the accuracy and reliability of statistical processes (for example, data collection and analysis; Powell & Trucano, 2006). Accessibility of education data, such as the format for dissemination and a plan for distribution, is also important (Powell & Trucano, 2006). Timeliness of data production, which relates to the quality aspect of serviceability, is also core to an effective EMIS, particularly because "obsolete data…may not have much value for use, resulting in missed intervention opportunities" (Hua & Herstein, 2003, p. 5).

Challenges around developing or maintaining an effective data system

Challenges that can arise within an EMIS include version compatibility problems in application software (Mohamed et al., 2009), insufficiently experienced or skilled staff, lack of training resources, varying authority over data collection and reporting (McDonald, Andal, Brown, & Schneider, 2007), and a lack of communication capacity across data systems (Means, Padilla, DeBarger, & Bakia, 2009).

Version incompatibility poses obstacles for generating usable, influential data that would be relevant and applicable for policymakers (Powell & Trucano, 2006). Resource and technology constraints (for example, a need for specific software) can also pose a challenge (Bandy, Burkhauser, & Metz, 2009; Powell & Trucano, 2006). A typical resource constraint is staff and institutional capacity to effectively employ the data collected (Bandy et al., 2009; Cassidy, 2006; LaPointe et al., 2009). Lack of data or system integration into a cohesive EMIS limits the ability to establish a functioning monitoring and evaluation system, as well as a process for planning and guiding policy (Hua & Herstein, 2003). Management may stop relying on data that are late or unreliable, "resulting in ineffective planning and budgeting, monitoring and evaluation, policy analysis, and policy-making" (Hua & Herstein, 2003, p. 6).

Some administrators or policymakers may have limited experience using data to guide their decision-making. Effort is needed to instill a culture of data use at the organizational level (Levine, 2010; Powell & Trucano, 2006). An Asian Development Bank report identifies this challenge as particularly relevant for at least one state in the Federated States of Micronesia (Levine, 2010).

Appendix B. Data sources and methodology

This appendix details the data sources used in the study, the characteristics of focus group participants, the data collection methods, and the data processing and analysis used. Each of the four benchmark levels for each of the five system aspects of quality are described in table B1.

Data sources

Recognizing the need for quality data systems, the International Monetary Fund developed the Data Quality Assessment Framework in 2003 to provide stakeholders with a flexible structure for the qualitative assessment of statistics in a number of subject areas (International Monetary Fund, 2003). The framework identifies quality-related features of the governance of statistical systems, statistical processes, and statistical products.

Building on this framework and applying it to education management information systems (EMISs), the World Bank developed the System Assessment and Benchmarking for Education Results (SABER) EMIS Assessment Tool to provide stakeholders with an objective scoring tool that allows comparison within a country over time as well as comparison across countries. The SABER EMIS Assessment Tool can assess and monitor EMISs on aspects of quality (each aspect is described below), which are described by a series of indicators (each aspect had 7–11 indicators). In addition to correcting typographical errors, Regional Educational Laboratory Pacific revised this tool in the following ways. Focusing questions were added to each indicator to help clarify the salient points of the scoring rubric. One quality aspect, methodological soundness, was removed from the ratings because its primary focus on applying international standards was not applicable to comparisons within and across states of the Federated States of Micronesia. Data specialists adhere to standards that apply within the Federated States of Micronesia (for example, those necessary for compliance with Joint Economic Management Committee regulations), rather than the United Nations Educational, Scientific and Cultural Organization (UNESCO) international standards referenced in the SABER tool. The tool has been applied in all four states and at the national level; the resulting data were used as the basis for this and other studies.

Data specialists in the state of Pohnpei assigned scores for each indicator in the revised SABER EMIS Assessment Tool. The tool provides a focus group protocol (see appendix C) with 46 indicators organized into five aspects of quality that characterize EMISs. The aspects are:
- *Prerequisites of quality.* Assesses whether the institutional frameworks that govern the information systems and data reporting and the supporting resources are available and adequate. This aspect includes 11 indicators and is divided into two subsections. For the first subsection on legal and institutional environment, four indicators of quality require that the laws, policies, and institutional arrangements clearly support the collection and reporting of education data and statistics. For the second subsection on whether human, financial, and computing resources are adequate to the task, seven indicators assess the resources, processes, and procedures to ensure that resources are used effectively and efficiently.
- *Integrity of education statistics.* Assesses the professionalism, objectivity, transparency, and ethical standards by which data staff operate and by which the data

and statistics are reported. This aspect includes nine indicators and is divided into three subsections. The first subsection, with four indicators, requires that statistical policies and practices are guided by professional principles. The second subsection, also with four indicators, requires that statistical policies and practices are transparent. The last subsection contains one indicator that requires that guidelines for staff behavior are in place and well known to the staff.

- *Accuracy and reliability of education statistics.* Assesses whether the data being collected and stored and the statistical techniques used are sound and that statistical reports being compiled and reported reflect reality. This quality aspect includes 10 indicators.

- *Serviceability (relevance, timeliness, and consistency).* Assesses whether the data being collected and the education statistics being generated are relevant and available to inform policy and practice decisions and are consistent over time so progress can be measured. This aspect includes seven indicators.

- *Accessibility.* Assesses whether education statistics (and their underlying metadata) are made available in clear and understandable ways to stakeholders. This quality aspect includes nine indicators.

Each of the 46 indicators has an associated question and scoring rubric, most with descriptors that identify five score points of .00, .25, .50, .75, and 1.00, from which data specialists are asked to select. In three cases (indicators 3.1, 3.2, and 3.5; see appendix C), the score depends on how many listed characteristics—short phrases describing key elements of the indicator—are present in the data system.

Characteristics of focus group participants

The Pohnpei state director of education identified five data specialists whose experience and familiarity with the education management information system qualified them to respond to questions regarding the system's quality and characteristics. These data specialists included a management specialist, a testing specialist, a data specialist, a representative from special education, and an individual whose work includes managing data for the school improvement program.

Data collection methods

Two weeks before the interview, these data specialists received the protocol and the consent form they would be asked to sign (see appendix C). They were invited to bring any physical evidence—regulations, logs, forms, and other artifacts—that supported their view on how an indicator should be rated. The focus group interview took place in one day. Each indicator and its associated question were read aloud, and data specialists were asked to discuss them as a group. Following the discussion, each specialist was asked for a score. Unanimity of response was not required for any question. Responses from each specialist were logged and projected on an overhead screen so that the data specialists could verify their response. At the end of the session on each aspect, data specialists were asked to review the section as a whole and consider whether the scores accurately reflected their expressed views.

Data processing and analysis

The scores for each question on the revised SABER focus group protocol were analyzed using descriptive statistics, identifying the high, low, and average scores from the data specialists. Next, the scores for the indicators under each of the five aspects of quality were averaged to identify the appropriate benchmark level for each aspect. Finally, the average of all questions was calculated to identify the overall benchmark level for the system. The questionnaire is shown in appendix C and the scores for each indicator and aspect of quality are given in appendix D. Table B1 describes the four benchmark levels for each of the five aspects.

Table B1. System Assessment and Benchmarking for Education Results benchmark descriptions

Benchmark level (score range)	Benchmark description
Overall average score	
Latent (.00–.30)	Lacking statistical infrastructure; little government commitment and use of data; greater needs for improving quality of national data than for internationally comparable data.
Emerging (.31–.59)	Basic data channels in place though still weaknesses in reporting by providers; some commitment to data use; data are still fragmented across ministries; coverage and relevance needs large improvement; some regional benchmarks used.
Established (.60–.79)	Stable channels of data collection and production; there is a clear strategy and investment in data and statistics; more varied sources of data including sample-based surveys; some emerging policy issues are addressed in terms of measurement; regional and international comparisons are frequently cited.
Mature (.80–1.00)	Integrated system of information across state and non-state providers; strong links between users and producers of data ensure responsiveness to relevant policy issues and data use; systems and information demands are often more complex; data on individuals regularly collected or tracked; international comparisons used widely and help to drive policy reforms.
Prerequisites of quality	
Latent (.00–.30)	No data sharing or coordination among agencies; low levels of confidentiality in the use of information; unclear legal mandate for collecting statistics; little concern for data quality or for the needs of data users.
Emerging (.31–.59)	Data sharing but ad-hoc coordination among agencies; confidentiality assured but users not aware of it; efficient use of inadequate resources; users' needs are considered sporadically, and data quality variations commonly found despite efforts at improving data quality.
Established (.60–.79)	Data sharing and coordination in place; confidentiality assured; legal framework indirectly in place through the legal mandate of the census agency; more efficiency in resource use is needed; users' needs assessed but infrequently; data quality processes in place but enforcement needs improvement.
Mature (.80–1.00)	Data sharing and coordination in place; confidentiality assured; legal framework in place; efficiency in resource use at acceptable levels; users' needs assessed yearly; data quality processes in place and enforced on a regular basis.
Integrity of education statistics	
Latent (.00–.30)	Statistics are often modified; professionalism of staff is not promoted; technical decisions are based on statistical and political considerations; statistics are produced with major omissions on institutional responsibilities and user considerations.
Emerging (.31–.59)	Statistics are not impartial; professionalism of the staff is promoted on a limited basis; errors in statistics are corrected sporadically; statistics have institutional backing but chain of responsibility is unclear; major changes in methods, source data and techniques are sporadically made public and guidelines for staff behavior are short and incomplete.
Established (.60–.79)	Statistics are impartial; professionalism of the staff is promoted; errors in statistics are corrected regularly; statistics have institutional backing but chain of responsibility is unclear; major changes in methods, source data and techniques are made public and guidelines for staff behavior are in place, but need revisions or improvements.

(continued)

Table B1. System Assessment and Benchmarking for Education Results benchmark descriptions
(continued)

Benchmark level (score range)	Benchmark description
Mature (.80–1.00)	Statistics are impartial; professionalism of the staff is promoted; errors in statistics are always corrected; statistics' institutional backing is clear and the chain of responsibility is easily determined; major changes in methods, source data, and techniques are always made public and good guidelines for staff behavior are in place.
Accuracy and reliability of education statistics	
Latent (.00–.30)	Source data are not assessed or assessed only sporadically; the compilation of source data follows methods that do not comply with international standards; intermediate results are not validated with data from other sources; statistical discrepancies are investigated and corrected sporadically or on an ad-hoc basis.
Emerging (.31–.59)	Source data are assessed with some regularity; source data come from comprehensive data collection tailored to the country's condition; the compilation of source data follow methods that loosely comply with international standards; intermediate results are validated with other data sources only when discrepancies are large and easily noted; statistical discrepancies are investigated and corrected sporadically or on ad-hoc basis.
Established (.60–.79)	Source data are assessed regularly; source data come from comprehensive data collection tailored to the country's condition; the compilation of source data follow international standards; intermediate results are validated with other data sources if discrepancies are easily noted; statistical discrepancies are investigated and corrected regularly.
Mature (.80–1.00)	Source data are assessed regularly; source data come from comprehensive data collection tailored to the country's condition; the compilation of source data follow international standards; intermediate results are always validated with other data sources; statistical discrepancies are always investigated and corrected.
Serviceability (relevance, timeliness, and consistency)	
Latent (.00–.30)	Statistics are published at irregular intervals and their timeliness is inconsistent with international standards; statistics are inconsistent within the data set and with other data sources; revisions are sporadic or absent and preliminary data are not identified.
Emerging (.31–.59)	Statistics are published at regular intervals but their timeliness is inconsistent with international standards; statistics are sometimes inconsistent within the data set and with other data sources; revisions are sporadic and preliminary data are rarely identified.
Established (.60–.79)	Statistics are published at regular intervals and their timeliness is consistent with international standards; statistics are consistent within the data set and with other data sources; revisions are regular but preliminary data are not always identified.
Mature (.80–1.00)	Statistics are published at regular intervals and their timeliness is consistent with international standards; statistics are consistent within the data set and with other data sources; revisions are regular and preliminary data are always identified.
Accessibility to stakeholders	
Latent (.00–.30)	The presentation of statistics is confusing; dissemination is inadequate and sporadic; documentation is inadequate or insufficient; level of detail does not conform to user needs, and there is no list of publications available to users.
Emerging (.31–.59)	The presentation of statistics needs improvement for better interpretation; dissemination is adequate but sporadic; documentation is deficient; level of detail conforms to user needs, but there is no list of publications available to users.
Established (.60–.79)	The presentation of statistics is adequate for their interpretation; dissemination is adequate but may benefit from including online media; documentation is good; level of detail conforms to user needs, but there is no list of publications available to users.
Mature (.80–1.00)	The presentation of statistics is good for their interpretation; dissemination is good and it includes online media; documentation is good and the level of detail conforms to user needs, and there is a catalog of publications available to users.

Note: *Latent* indicates that the process or action required to improve the aspect of quality is not in place; *emerging* indicates that the process or action is in the process of implementation; *established* indicates that the process or action is in place and meets standards; *mature* indicates that the process or action is an example of best practice.

Source: World Bank, 2011, pp. 46–48.

Appendix C. Data collection instruments

This appendix includes the focus group protocol and the consent form provided to each participant before the focus group session for this study. The protocol was adapted from a World Bank protocol developed for the System Assessment and Benchmarking for Education Results (SABER) Education Management Information System (EMIS) Assessment Tool.

The revised SABER EMIS protocol differs from the World Bank's protocol in the following ways: it includes focusing questions for each indicator, it includes minor clarifying revisions (for example, revised introductory text for each aspect; references to "Ministry of Education" replaced with "Department of Education"), and it deletes one of the aspects of quality that was not relevant for this study (see appendix B). Finally, two of the scores for indicator 4.7 were swapped (.50 and .75) to correct an error. All other aspects of the protocol (that is, the aspects of quality, indicators, and scoring rubrics), with the exception of typographical errors, remain unchanged from the original.

Protocol for the focus group sessions using the SABER EMIS Assessment Tool aspects of quality, indicators, and scoring rubric

There are five aspects of quality that help define the attributes of an EMIS. For each aspect, there are anywhere from 7 to 11 indicators that identify the important elements of that category. For each indicator, you will be asked a focusing question and provided with clarifying statements and a scoring rubric.

For example, under the aspect "Accuracy and reliability" a focusing question asks: Are intermediate results always validated against other information where applicable? Specifically, you'll be asked which best describes the frequency with which intermediate results are validated in Pohnpei:

1 *Intermediate results are always validated against other information where applicable*

.75 *Intermediate results are validated most of the time against other information where applicable*

.50 *Intermediate results are sometimes validated against other information where applicable*

.25 *Intermediate results are rarely validated against other information where applicable*

0 *Intermediate results are not validated against other information where applicable*

Please provide a score based upon your best understanding of current practices, providing any documents, codebooks, or other materials that you believe support your score.

Aspect 1. Prerequisites of quality

Aspect 1.1 Legal and institutional environment (subsection)

The objective of assessing this aspect of quality is to determine the degree to which the legal and institutional environments are supportive of educational statistics.

Based on the quick analysis of the bulleted items, please assign a score to each of the following four indicators using the scoring table attached to each indicator. Indicate your rating by circling the appropriate score.

Indicator 1.1 The responsibility for collecting, processing, and disseminating statistics is clearly specified.

Question: Is the responsibility for collecting, processing, and disseminating statistics clearly specified in law that clearly assigns such tasks to an agency or institution; do all working arrangements with other institutions reflect this assignment of responsibility?

- A law exists that assigns the primary responsibility to an institution or an agency for the collection, processing, and dissemination of education statistics. The law can be in the form of a statistical law or other formal instrument (i.e., executive decree).
- Working arrangements with other institutions are consistent with this assignment of responsibility.

Indicator 1.1	Choose one response in the response matrix and clarify with comments whenever necessary.				
Responsibility for collecting and disseminating education data is clearly specified.	0	.25	.50	.75	1
	No lines of responsibility defined and no law.	Limited agreement on responsibilities and no law.	Wide agreement on responsibilities but no law.	Law exists but vague on responsibilities; it needs clarification and/or updating.	Law with clear roles and responsibilities being implemented.

Indicator 1.2 Data sharing and coordination among data-producing agencies are adequate to facilitate data sharing and cooperation between the education statistics agency and other data producing agencies.

Question: Are the formal data sharing and coordination arrangements between the education statistics agency and other data producing agencies sufficient to ensure the efficient and timely flow of source data between these agencies, to ensure the consistency of methods and results and to ensure sufficient contact, avoiding duplication of effort and accounting for the respondent burden?

- Arrangements or procedures are in place to ensure the efficient and timely flow of source data between the education statistics agency and other data producing agencies.
- Arrangements are in place to ensure the consistency of methods and results.
- There is regular contact with other data producing agencies to coordinate data requirements, to avoid duplication of effort, and to take into account respondent burden.

Indicator 1.2	Choose one response in the response matrix and clarify with comments whenever necessary.				
Data sharing and coordination among different agencies are adequate.	0	.25	.50	.75	1
	No sharing, no arrangements, no consistency.	Informal agreement; sporadic/ad hoc sharing.	Informal agreement to share exists and is mostly implemented.	Formal agreement to share exists but not implemented completely.	There are formal arrangements, logistics, and verification of consistency for inter-agency cooperation.

Indicator 1.3 Respondents' data are always confidential and used only for statistical purposes. Also, the confidentiality of individual respondents' data is guaranteed and that guarantee is widely known.

Question: Does a law or decree exist that ensures that respondents' data are always confidential and used only for statistical purposes; does the law or decree and the actual procedures implemented for enforcement guarantee such confidentiality, and is that guarantee widely known?

This indicator has two subcomponents: the existence of a legal framework for the confidentiality of individual data, and the existence of actual procedures that ensure confidentiality.

- The law (or decree) clearly states that whenever school administrative data or survey data are collected, the individual responses are confidential and shall only be used for statistical purposes.
- Before answering survey questions, respondents are informed of their obligation to provide a truthful response, and the rights to have that response treated in complete confidence.
- There are clearly stated penalties against staff that disclose confidential data and those penalties are enforced.
- Staff reviews all data ready for dissemination for possible indirect disclosure of confidential data and devise tables and outputs in a way that prevents disclosure.
- Access to individual data is restricted to staff who require the information in the performance of their duties.
- Data storage at the education statistics agency is secure enough to prevent unauthorized access to individual data.
- Confidentiality of data is secure during storage and during the process of the destruction of records.

Indicator 1.3	Choose one response in the response matrix and clarify with comments whenever necessary				
Individual/personal data are kept confidential and used for statistical purposes only.	0	.25	.50	.75	1
	No law; no confidentiality.	Law, but no confidentiality.	Law, some confidentiality.	Law and confidentiality, but respondents not informed of their rights.	Law, confidentiality, full rights.

Indicator 1.4 There is a legal mandate that ensures that individuals give their response to statistical or survey questions.

Question: Is there a legal mandate, free of conflicts with other laws or provisions, that gives the education data agency the authority to collect and require data from individuals; and in doing so, does the agency provide assistance in order to minimize respondent burden and create goodwill to secure respondent cooperation?

This indicator has two subcomponents: there is a legal mandate that gives the education data agency the authority to collect information, and the provisions made by the agency to assist individuals in their response to the questions.

- The agency has the legal authority to collect data required to compile educational statistics.

- Any conflicts between the legal authority of the agency and other laws or provisions have been successfully resolved.
- Individuals know that there are penalties for noncompliance with reporting requirements (including misreporting), even if such provisions rarely need to be employed.
- The agency considers carefully the burden for respondents and provides them with assistance in completing and submitting forms and information.
- The agency tries to create goodwill to secure the cooperation of respondents (e.g., by answering all the respondents' questions, by explaining the benefits of the data, and by being informative about the overall need for their responses and their use).

Indicator 1.4	Choose one response in the response matrix and clarify with comments whenever necessary				
Statistical reporting is ensured through legal mandate and/or measures to encourage response.	0	.25	.50	.75	1
	No legal mandate, conflicts unresolved, no penalties, no assistance.	Informal arrangements, conflicts unresolved, no penalties, yes assistance.	Legal mandate, conflicts unresolved, no penalties, yes assistance.	Legal mandate, conflicts resolved, no penalties, yes assistance.	Legal mandate, conflicts resolved, penalties enforced, yes assistance.

Aspect 1.2 Human and material resources are adequate for the task (subsection)

The objective of assessing this aspect of quality is to determine the degree to which the human and material resources are supportive of educational statistics.

Based on the quick analysis of the bulleted items, please assign a score to each of the following seven indicators using the scoring table attached to each indicator. Indicate your rating by circling the appropriate score.

Indicator 1.5 Staff, financial, and computing resources are commensurate with statistical programs of the education data agency.

Question: Are personnel qualified for their positions, trained to ensure compliance with international standards, and retained to ensure that there are sufficient numbers of staff adequate to perform the required tasks? Are computer hardware, software, and storage maintained and updated to meet the demands of the required tasks?

The issue of resources is central to data quality. Now that computing power is relatively inexpensive, the issue of staff training and staff quality becomes more pressing. As a corollary, the budget assigned to education statistics becomes a policy issue, since it should be sufficient to pay good staff adequately and provide them with sufficient resources to comply with the requirements of high quality data.

To facilitate rating this indicator it can be useful to examine the following topics:

Staff resources are adequate to perform required tasks.
- Overall, the number of the staff is adequate to perform the required tasks.
- The qualifications of the staff are adequate and they are given continuous on-the-job training to comply with international statistical standards.
- Staff retention is a priority of agency management.

Computing resources for compiling statistics are adequate to perform required tasks.
- Software are continually updated and well adapted to perform existing and emerging tasks.
- Hardware installation is distributed adequately to ensure efficient processing of data and management of the databases.
- Hardware and software security issues are adequate to ensure compliance.

Financial resources are adequate to perform required tasks.
- Overall, financial resources are adequate to perform required tasks and commensurate with the overall resources available within the education sector.
- There is a projection of future budgetary needs derived from an action plan.

Indicator 1.5	Choose one response in the response matrix and clarify with comments whenever necessary				
Staff, facilities, computing resources, and financing are commensurate with the activities.	0	.25	.50	.75	1
	Short on staff, short on computers, no training, no server, and outdated software.	Staff insufficient, training required, 75% of computers and software and storage need updating.	Staff is sufficient but training required, 50% of computers and software need updating, but storage is adequate.	Staff is sufficient, training is required, 25% of computers need updating but software and storage are adequate.	Staff is sufficient, good training, enough computers and storage, updated software.

Indicator 1.6 Processes and procedures are in place to ensure that resources are used efficiently.

Question: Are processes and procedures in place that reflect efficient management of human and physical resources and effective monitoring of resource use, and ensure good data management, including the careful design of collection instruments and efficient compilation of data?

This indicator is very important because it gives a quick diagnostic of the agency. As a result, the bullet points below should help determine your score as well as future courses of action.
- Managers in the education statistics agency promote a policy vision and a direction that is shared with the staff.
- Efficiency is enforced by ensuring consistency in concepts, definitions and methodologies across the different units and agencies dealing with education statistics.
- Data collection instruments are carefully designed to avoid duplication of information and lengthy processes in compiling data.
- Data compilation procedures are managed to minimize processing errors such as coding, editing, and tabulation errors.
- Periodic reviews of working processes are undertaken to ensure that they are improved upon.
- The data producing agency strives to make the best use of newly emerging opportunities, such as computing technology for data processing/dissemination, to increase the efficiency of resource use.

Indicator 1.6	Choose one response in the response matrix and clarify with comments whenever necessary				
Processes and procedures are in place to ensure that resources are used efficiently.	0	.25	.50	.75	1
	Management disorganized, untrained, and inefficient; data management and processes highly inefficient.	Management of human and physical resources is inefficient; technical data processes with duplications and errors.	Management of human and physical resources is inefficient; there is no monitoring of resource use but data management procedures just need improvement.	Efficient management and monitoring of physical resources, but improvements needed in human resource management. Data management procedures in place.	Efficient management of human and physical resources, good monitoring of resource use, and data management procedures in place.

Indicator 1.7 Education statistics meet user needs and those needs are monitored continuously.

Question: Are users of statistics consulted on the design of statistics to be produced and asked for feedback as part of the review process; does the agency regularly participate in regional and international meetings on statistics?

The issue of accountability is related to this indicator, since to be accountable the education sector has to produce statistical information that is compatible with the information needs of parents and government. As parents and society require better quality in education, their information needs also change, such as the inclusion of standardized test scores and the reporting of educational expenditures by households. Hence, monitoring user needs and producing the corresponding statistics is essential.
- There is a regular dialogue within the education department between staff responsible for statistics and those responsible for policy on statistical information needs, the work plan to meet those needs, and the resources needed to meet the new demand.
- An established process of review takes place periodically to assess whether the program meets the needs of users outside of government.
- The data producing agency regularly participates in international statistical meetings and seminars organized by international and regional organizations to inform about data provision in other countries.

Indicator 1.7	Choose one response in the response matrix and clarify with comments whenever necessary				
Education statistics meet user needs and those needs are monitored continuously.	0	.25	.50	.75	1
	No user consultation, no user feedback, no international participation.	Some user consultation but no feedback, no international participation.	User consultation, some feedback, no international participation.	User consultation, some user feedback, some international participation.	Users are consulted in the design of statistics to be produced, there is user feedback; participation in international meetings.

Indicator 1.8 Processes are in place to focus on data quality, on monitoring the quality of the collection, on processing and dissemination of education statistics, and on the inclusion of data quality in statistical planning.

Question: Are processes in place and enforced that focus on data quality, on monitoring the quality of data collection, on processing and dissemination of education statistics, and on the inclusion of data quality in statistical planning?

Although it may sound repetitious, data quality improvements depend a great deal on the consideration of data quality as an overarching goal of the agency in charge of education statistics. If the agency is obsessed with data quality it should reflect that obsession in the implementation of processes and procedures that produce quality data.

- Agency management is sensitive to all aspects of data quality: integrity, methodological soundness, accuracy and reliability, serviceability, and accessibility.
- The agency has implemented processes or activities that focus on quality (e.g., Total Quality Management, ISO 9000, and external audits such as DQAF).

Indicator 1.8	Choose one response in the response matrix and clarify with comments whenever necessary				
Processes are in place to focus on quality.	0	.25	.50	.75	1
	No quality awareness in place.	Management promotes ad hoc quality improvement measures.	Management clearly committed to improving quality.	Quality is a main objective of operating plan.	Quality procedures in place and enforced by management.

Indicator 1.9 Processes are in place to monitor the quality of the collection, processing, and dissemination of statistics.

Question: Are internal and external reviews regularly scheduled, including opportunities for user feedback, in order to monitor the quality of the collection, processing, and dissemination of statistics?

- Reviews—such as DQAF—are undertaken to identify problems at the various stages of collecting, processing, and disseminating data.
- There is another agency in government that provides guidance on the quality of statistics and on strategies for improving data production.
- Systematic processes exist to obtain feedback from users on data quality issues.

Indicator 1.9	Choose one response in the response matrix and clarify with comments whenever necessary				
Processes are in place to monitor the quality of data processes.	0	.25	.50	.75	1
	No formal reviews; no external reviews; no user feedback on quality.	Formal reviews every 10 years; no external reviews; user feedback on quality every 10 years.	Formal reviews every 5 years; external reviews every 10 years; user feedback on quality every 5 years.	Formal reviews every 3 years; external reviews every 5 years; user feedback on quality every 3 years.	Annual formal reviews; external reviews every 3 years; annual user feedback on quality.

Indicator 1.10 Processes are in place to deal with quality considerations in planning the statistical program.

Question: Are processes in place to ensure careful consideration of tradeoffs among aspects of quality (for example, between timeliness, completeness, and accuracy/reliability) in planning?

- Agency management knows the tradeoffs among the aspects of quality (for example between timeliness, completeness, and accuracy/reliability).
- The tradeoffs among the aspects of quality are discussed with users and their views are taken into consideration.
- Decisions on the tradeoffs are explicitly included in the data quality improvement program.

Indicator 1.10	Choose one response in the response matrix and clarify with comments whenever necessary				
Processes are in place to deal with quality consider-ations in planning the statistical program.	0	.25	.50	.75	1
	There is no aware-ness of tradeoffs.	There is awareness about tradeoffs but no tradeoff analysis is conducted.	Tradeoff analysis conducted in ad hoc manner.	Tradeoff analysis conducted occasion-ally for preserving coverage.	Tradeoff analysis conducted regularly for preserving accuracy and reliability.

Indicator 1.11 Mechanisms exist for addressing new and emerging data requirements.

Question: Are meetings held with stakeholders and other data users for feedback on the existing portfolio, emerging needs, and on current statistical series and reports?
- Meetings are periodically held with stakeholders and other data users to review the existing portfolio of education statistics and reports to identify any emerging data requirements.
- Users' feedback on the statistical series and statistical reports are encouraged.

Indicator 1.11	Choose one response in the response matrix and clarify with comments whenever necessary				
Mechanisms exist for addressing new and emerging data requirements.	0	.25	.50	.75	1
	No meetings, no feedback.	Meetings with stakeholders every 5 years and no for-mal instruments for feedback applied.	Meetings with stakeholders every 5 years and formal instruments for feedback applied.	Meetings with stakeholders every 3 years and formal instruments for feedback applied.	Annual meeting with stakeholders and formal instruments for feedback applied.

Aspect 2. Integrity of education statistics

The objective of assessing this aspect of quality is to determine the degree to which the integrity of educational statistics is addressed by the data system. Based on the quick analysis of the bulleted items, please assign a score to each of the following nine indicators using the scoring table attached to each indicator. Indicate your rating by circling the appropriate score.

Aspect 2.1 Statistical policies and practices are guided by professional principles (subsection)

The term *professionalism* refers to the ability of statistical staff to exercise their profession with technical independence and without outside interference that could result in the violation of the public trust in statistics and in the institution.

Indicator 2.1 Statistics are impartial. Impartiality is assured because the terms and condi-tions under which educational statistics are produced guarantee the professional indepen-dence of the agency.

Question: Is there a law or formal provision that protects the professional independence of the data producing institution?
- There is a law or a formal provision that spells out the professional independence of the agency by prohibiting interference from others—including other govern-ment agencies—in the collection, processing, reporting, and dissemination of edu-cation statistics.

- Professional staff is protected by a code of professional ethics and this code is supported by the Department of Education and/or the national statistical agency.

Indicator 2.1	Choose one response in the response matrix and clarify with comments whenever necessary				
Statistics are produced on an impartial basis.	0	.25	.50	.75	1
	There is no law protecting the professional independence of the data producing institution.	There are informal mechanisms available for protecting professionalism of data producing institution.	There is a law protecting professionalism but it is not enforced.	There is a law protecting professionalism but is outdated and/or enforced unevenly.	A law is in force protecting the professional independence of the data producing institution.

Indicator 2.2 Professionalism is actively promoted and supported within the data-producing agency.

Question: Is professionalism actively promoted and supported through recruitment and promotion practices and in expectations for publication of research and analysis that include an internal review process?
- Professional competency plays a key role in recruitment and promotion practices.
- Professionalism is promoted by the publication of methodological papers and by encouraging participation in conferences and meetings with other professional groups.
- Research and analysis undertaken by the data-producing agency for publication are subject to internal review and other processes to maintain the agency's reputation for professionalism.

Indicator 2.2	Choose one response in the response matrix and clarify with comments whenever necessary				
Professionalism of staff is actively promoted.	0	.25	.50	.75	1
	Professionalism of staff is ignored.	Professional credentials considered for recruitment and promotion only sporadically.	Professional credentials are considered for recruitment and promotion.	Professional credentials are considered for recruitment and promotion and staff are encouraged to publish.	Professional credentials are considered for recruitment and promotion and staff are encouraged to publish. There is a peer review process in place.

Indicator 2.3 Choices of sources and statistical techniques as well as decisions about dissemination are informed solely by statistical considerations.

Question: Are choices of source data and statistical techniques based solely on statistical considerations and the methods used publicly documented?
- Choosing source data (e.g., administrative from school census; data from household surveys or population census) and statistical techniques (e.g., processing and validation techniques) is based solely on statistical considerations.
- The choice process is driven by technical reasons and the method used is publicly documented.

Indicator 2.3	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	.25	.50	.75	1
Choices of data sources and statistical techniques are made solely by statistical considerations.	Choice of data sources are arbitrary and staff do not use technical criteria.	Choice of data sources are technically justified; staff can use technical criteria, but they are not made public.	Choice of data sources are technically justified only sometimes; staff are encouraged to enforce technical criteria on an ad hoc basis and not publicly.	Choice of data sources are technically justified; staff are encouraged to enforce technical criteria but not publicly.	Choice of data sources are technically justified; staff are encouraged to enforce technical criteria and publish those criteria.

Indicator 2.4 The appropriate statistical entity is entitled to comment on erroneous interpretation and misuse of statistics.

Question: Does the agency comment publicly on erroneous interpretations or misuse of education statistics by providing explanatory materials and briefings to the public?
- The agency producing education statistics maintains the public trust by commenting publicly on erroneous interpretations or misuse of education statistics.
- The agency seeks to prevent misinterpretation or misuse of education statistics by providing explanatory materials and briefings to the public.

Indicator 2.4	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	.25	.50	.75	1
Agency is entitled to comment on erroneous interpretation and misuse of statistics.	Agency never comments on errors or misinterpretations or provides technical explanations in public.	Agency comments publicly only on technical errors but not on misinterpretations and does not provide technical explanations.	Agency comments only on technical errors and provides technical explanations but does not act on misinterpretations.	Agency comments publicly on technical errors, provides technical explanations, and comments on misinterpretations only under pressure.	Agency comments publicly on technical errors, provides technical explanations, and comments on misinterpretations on a routine basis.

Aspect 2.2 Statistical policies and practices are transparent (subsection)

Indicator 2.5 The terms and conditions under which statistics are collected, processed, and disseminated are available to the public.

Question: Is information available to the public about the terms and conditions under which the statistics are collected, compiled, and disseminated; the confidentiality of individual responses; and the security measures taken?
- Information is available to the public about the terms and conditions under which educational statistics are collected, compiled, and disseminated; the confidentiality of individual responses; and the security measures taken for storing individual data.
- Statistical publications identify where more information about the agency and its products can be found.

Indicator 2.5	Choose one response in the response matrix and clarify with comments whenever necessary				
Terms and conditions are available to the public.	0	.25	.50	.75	1
	Terms and conditions and additional information are not released.	Terms and conditions and additional information are difficult to find, although they are available on request.	Terms and conditions and additional information are difficult to find, although they are available.	Terms and conditions and links to additional information are available online only.	Terms and conditions are clearly available; links to additional information are clear and open in print and online.

Indicator 2.6 Internal governmental access to statistics prior to their release is publicly identified.

Question: Is information openly available regarding access to statistics prior to their release, including who has prior access, at what point that access is given, and that the agency in charge of education statistics has responsibility for that process?

Sometimes statistical results are first available internally among government institutions. The main reason for these internal releases may be for internal efficiency, where other government offices need the information to produce their own statistical series, and sometimes there are reasons of coordination in the dates for statistical releases. Such internal availability is fine as long as data integrity is not compromised. Still, the public must be aware of the practice.

- Access to statistics prior to release is made public in terms of who has access, and at what point of the compilation process access is given.
- The approval process for the publication of education statistics continues to be the responsibility of the agency in charge of education statistics.

Indicator 2.6	Choose one response in the response matrix and clarify with comments whenever necessary				
Public is aware of internal governmental access to statistics prior to their release.	0	.25	.50	.75	1
	No information given about internal access to preliminary data.	Information on internal access given upon request.	Some information on internal access to preliminary data is publicly available.	All information about internal access to preliminary data given upon request.	Information about internal access to preliminary data is openly available.

Indicator 2.7 Products of statistical agencies/units are clearly identified as such.

Question: Are products of the agency clearly identified as such, and does the agency request and secure attribution when its statistics are reproduced or used in joint publications?

- Data released to the public are clearly identified as a product of the agency in charge of education statistics (e.g., by name, logo, and insignia).
- In the case of joint publications, the part attributable to the agency is identified.
- The agency requests attribution when its statistics are used or reproduced.

Products of edu-cation statistics agency are clearly identified.	0	.25	.50	.75	1
	There is no attribu-tion to any institu-tion in the statisti-cal publications.	Attribution given only to the Depart-ment of Education and no requests are made for attribution from others.	Attribution is given to the Department of Education and other entities in the publication, but no requests for attribu-tion from others.	Attribution given to the agency and to others but no requests for attri-bution from others enforced.	Statistical unit is clearly identified as the source of data, clearly identifies collaborating institutions, and attribution is requested from other users.

Indicator 2.8 Advance notice is given of major changes in methodology, source data, and statistical techniques.

Question: Is advance notice provided to users of agency statistics whenever there are major changes in methodology, source data, or statistical techniques?
- Users of education statistics are made aware in advance of major changes in meth-odology, source data, and statistical techniques.

Advance notice is given of major changes in method-ology, source data, and statistical techniques.	0	.25	.50	.75	1
	No notices are given on any changes in methodology, source data, and statistical tech-niques.	Agency sends notice of major changes in methods, sources, and techniques only upon request.	Agency sends notice of major changes in methods, sources, and techniques only to selected institu-tions.	Agency gives notice of major changes in methods, sources, and techniques several months after making the changes.	Agency sends notice of major changes in methods, sources, and techniques as soon as the decision is made.

Aspect 2.3 Policies and practices in education statistics are guided by ethical standards (subsection)

Ethical standards—in an intuitive form—are those principles that the general public uses to differentiate right from wrong. Following this reasoning, the application of ethical stan-dards to the agency in charge of education statistics implies that the agency follows clear standards of good conduct and that those standards are defined for its staff and the general public.

Indicator 2.9 Guidelines for staff behavior are in place and are well known to the staff.

Question: Does the agency provide staff clear guidelines regarding conflicts of interest and ethical behavior?
- There are clear guidelines outlining correct behavior when the agency or its staff is confronted with conflicts of interest.
- There are clear guidelines for connecting ethical behavior with staff work. Exam-ples of this clause can be the use and misuse of statistics, the use of public property to conduct private business, or the alteration of statistics in exchange for money.
- The reputation of the agency and its management is tied to compliance of ethical standards.

Indicator 2.9	Choose one response in the response matrix and clarify with comments whenever necessary				
Guidelines for staff behavior are in place and are well known to the staff.	0	.25	.50	.75	1
	Guidelines for staff behavior are non-existent.	Guidelines for staff behavior are vague and not communicated to staff.	Guidelines for staff behavior are in place but not communicated to the staff.	Guidelines for staff behavior are in place and are well known to the staff.	Guidelines for staff behavior are in place, are well known to the staff, and actively enforced.

Aspect 3. Accuracy and reliability of education statistics

The objective of assessing this aspect of quality is to determine the degree to which source data are accurate and reliable. Based on the quick analysis of the bulleted items, please assign a score to each of the following 10 indicators using the scoring table attached to each indicator. Indicate your rating by circling the appropriate score.

Indicator 3.1 Source data are obtained from comprehensive data collection programs that take into account country-specific conditions.

Question: Are the source data obtained comprehensive, taking into account the conditions specific to Pohnpei?
- Statistics describe the structure and normative characteristics of the education system, aligning it as much as possible with the ISCED97 standards.
- Statistics on enrollment and education resources are collected through a regular administrative school census program.
- Administrative school censuses collect information on the structure of educational system, students, teachers, and educational expenditure.
- Statistics on the demand for education are collected through household surveys and population censuses.
- Statistics on the quality of learning outcomes are collected through assessments of student achievement.
- Statistics on the environment within schools that impact quality of education are collected via school surveys.

The response matrix for this question is somewhat different from the others. The right-hand cell lists all the different elements in a comprehensive dataset of the education system. Scoring is done by subtraction, that is, if the source data have the five elements listed in the right-hand cell, the score is 1. If the source data have only four of the five elements, the score is .75; if the source data have only three of the five elements, the score is .5; if the source data have only two of the five elements, the score is .25; and if the source data have only one, the score is 0.

Indicator 3.1	Choose one response in the response matrix and clarify with comments whenever necessary.
Source data are obtained from comprehensive data collection that takes into account country-specific conditions.	Source data includes (1) system structure, (2) regular census on enrolment, teachers, school and education finances, (3) education demand via household surveys, (4) learning outcomes, and (5) school characteristics that impact education quality.

Indicator 3.2 Source data reasonably approximate the definitions, scope, classifications, valuation, and time of recording required.

Question: Do source data reasonably approximate the definitions, scope, classifications, valuation, and time of recording required?

This question refers to the compatibility between education statistics to be produced by the Department of Education and the data produced by its sources of data. It should be clear that the more compatible and consistent the source data are with the statistics required by the education system, the lower the probability of error and the higher the probability of having education statistics of good quality.

- Source data are consistent with the definitions, scope, and classifications of education statistics.
- Source data are consistent with the time of recording, reference periods, and valuation of education statistics.
- Data compilers are aware of differences in concepts and definitions used in the source data from those required of education statistics.

The response matrix for this question is somewhat different from the others. The right-hand cell lists all the different elements in a comprehensive dataset of the education system. Scoring is done by subtraction, that is, if the source data have the [four] elements listed in the right-hand cell, the score is 1. If the source data have only [three] of the [four] elements, the score is .75; if the source data have only [two] of the [four] elements, the score is .5; if the source data have only [one] of the [four] elements, the score is .25; and if the source data have [none], the score is 0.

Indicator 3.2	Choose one response in the response matrix and clarify with comments whenever necessary.
Data are reasonably confined to the definitions, scope, classifications, and time of recording required.	(1) All source data complies with the standards and scope of education statistics data, (2) there are procedures to update and standardize source data as needed, (3) data compilers are aware of inter-source differences, (4) proper referencing is done for documenting different source data.

Indicator 3.3 Source data are timely.

Question: Are source data agencies compliant with deadline needs of education statistics; and are there follow-up procedures for ensuring compliance?

- Data collection system provides for the timely receipt of source data.
- Source data providers are aware of the deadlines set for the reporting of education statistics.
- The education statistics agency employs systematic follow-up procedures to ensure the timely receipt of source data.
- Source data from the school census on enrollments and teachers are provided to the area responsible for producing statistics no later than 6 months after the end of the school year.
- Source data on educational expenditures are collected from within the Department of Education and other departments and institutions no later than 6 months after the end of the school year.

Indicator 3.3	Choose one response in the response matrix and clarify with comments whenever necessary				
Source data are timely (6 months after event).	0	.25	.50	.75	1
	Ad hoc or sporadic data exchange between education statistics and source data providers.	Source data agencies are compliant with deadline needs of education statistics.	Source data agencies are compliant with deadline needs of education statistics; education data are provided more than six months after the end of the school year to other source providers.	Source data agencies are compliant with deadline needs of education statistics; there are follow-up procedures for ensuring compliance; education data are provided more than six months after the end of the school year to other source providers.	Source data agencies are compliant with deadline needs of education statistics; there are follow-up procedures for ensuring compliance; education data are provided within six months after the end of the school year to other source providers.

Indicator 3.4 Source data—including censuses, sample surveys, and administrative records—are routinely assessed for coverage, sample error, response error, and non-sampling error; the results of the assessments are monitored, and corrections to education statistics methods are made and published.

Question: Are source data routinely audited for accuracy, and is information documented regarding issues such as sample selection, missing and imputed data, and sampling errors?
- Administrative and survey data are audited to check the accuracy of source data (e.g., inspection of field collections, random post-enumeration checks).
- Accuracy of data from all sources used to compile statistics is routinely assessed in terms of monitored events, population coverage, and the time frames.
- Information is compiled on coverage, sampling errors (where applicable), non-response errors (e.g., non-response rates for various socioeconomic groups), and the percentage of missing and/or imputed data by methods of imputation.
- For surveys, sampling standard errors of survey estimates are provided in order to form confidence intervals for population values, especially when the estimates are based on a small sample.
- For surveys, sample selection is adjusted when sampling errors become large.
- Relating to administrative data:
  - The use of school registers is promoted and the accuracy of school registers is periodically assessed: students dropping out are removed from the register or identified as no longer enrolled, students moving or changing schools are removed from the register or identified as no longer enrolled, and the register includes all students currently enrolled.

Indicator 3.4	Choose one response in the response matrix and clarify with comments whenever necessary				
Other data sources, such as censuses, surveys, and administrative records, are routinely assessed.	0	.25	.50	.75	1
	Source data are not audited; information on sampling errors and imputed data are not documented or unavailable.	Source data are rarely audited; information on sampling errors and imputed data are not documented or unavailable.	Source data are routinely audited; information on sampling errors and imputed data are rarely documented or shared.	Source data are routinely audited; information on sampling errors and imputed data are documented and shared.	Source data are routinely audited; information on sampling errors and imputed data are documented and statistics staff is trained to handle these issues.

Indicator 3.5 Data compilation employs sound statistical techniques to deal with data sources.

Question: Does the agency employ sound statistical techniques to deal with data sources?
- Data compilation procedures minimize processing errors such as tabulation errors and report generation.
- The report forms allow for easy completion of the forms and are appropriate for computer processing. Forms have also been pilot-tested with a sample of respondents.
- Considerations relating to surveys: target population is defined.
  - Sample frames are available for conducting surveys of statistical units (e.g., individual, household, and community), minimizing undercoverage and overcoverage, and are updated regularly.
  - Scientific random sampling techniques are used.
  - Sample size is appropriate.
- Considerations relating to administrative data: Enrollment data are collected through a school census.
- A register of all schools exists, and is used to identify responding and nonresponding schools.
  - The register covers all schools, with separate identification of public and private schools.
  - In expenditure data, intergovernmental transfers (from one department to another or from one level of government to another) are netted out and counted only at the level where actual expenditure occurs.
  - Institutions and programs for which education expenditure data are reported are the same as those for which staff and enrollment data are reported. If this is not the case, data are provided separately on number of full-time-equivalent (FTE) students and staff in institutions and programs covered by the expenditure data.

The response matrix for this question is somewhat different from the others. The right-hand cell lists all the different elements in a comprehensive dataset of the education system. Scoring is done by subtraction, that is, if the source data have the five elements listed in the right-hand cell, the score is 1. If the source data have only four of the five elements, the score is .75; if the source data have only three of the five elements, the score is .5; if the source data have only two of the five elements, the score is .25; and if the source data have only one, the score is 0. *

Indicator 3.5	Choose one response in the response matrix and clarify with comments whenever necessary.
Data compilation employs sound statistical techniques to deal with data sources.	For survey data: (1) random sampling, (2) appropriate sample size. For census data: (3) updated registry of all schools (public, private) exists to identify responding and non-responding schools.

Indicator 3.6 Other statistical procedures employ sound statistical techniques.

Question: Does the agency document data adjustments and transformations and employ sound statistical methods in data transformation?
- Imputation methods, estimation techniques (e.g., sampling weights, calibration weights), employ sound statistical techniques.

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* Given the inconsistency of the protocol instructions with the number of elements listed, data specialists were instructed to use a revised version of the scoring approach for this indicator.

- Problems regarding non-responses, recall errors, reporting errors, respondents effects, interviewer effects, and inappropriate instrument design are addressed.
- Imputation and estimation methods are appropriate for dealing with missing data from administrative records, household surveys and population censuses, sample survey or schools, and assessments of student achievement. Proper imputation methods are used wherever feasible to handle missing, invalid or inconsistent responses. If there is a sizeable part of the population that is not covered by sources used for regular compilation of statistics, undercoverage adjustments are made, or if such adjustments are not feasible in terms of being statistically defensible, the limitation in the coverage of the statistics is described.
- Where compensation for missing data is not feasible (e.g., if data is not collected from private schools), the nature of the missing data is described.

Indicator 3.6	Choose one response in the response matrix and clarify with comments whenever necessary				
Other statistical procedures (data editing, transformations, and analysis) employ sound statistical techniques.	0	.25	.50	.75	1
	No data adjustments made when needed.	Some data adjustments and transformations made but not documented.	Data adjustments and transformations made but not documented; statistical methods used in data transformation not to international standards.	Data adjustments and transformations made but not documented; sound statistical methods used in data transformation.	Data adjustments and transformations documented; sound statistical methods used in data transformation.

Indicator 3.7 Assessment and validation of intermediate data and statistical outputs: Intermediate results are validated against other information where applicable.

Question: Are intermediate results always validated against other information where applicable?
- Data from different sources but measuring the same or closely related phenomena are compared against each other.

Indicator 3.7	Choose one response in the response matrix and clarify with comments whenever necessary				
Intermediate results are validated against other information where applicable.	0	.25	.50	.75	1
	Intermediate results are not validated against other information where applicable.	Intermediate results are rarely validated against other information where applicable.	Intermediate results are sometimes validated against other information where applicable.	Intermediate results are validated most of the time against other information where applicable.	Intermediate results are always validated against other information where applicable.

Indicator 3.8 Statistical discrepancies in intermediate data are assessed and investigated.

Question: Are statistical discrepancies in intermediate data always assessed and investigated?
- Post-survey data analysis is conducted to monitor statistical discrepancies.
- Provision is made for immediate follow-up to reconcile data inconsistencies.

Indicator 3.8	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	.25	.50	.75	1
Statistical discrepancies in intermediate data are assessed and investigated.	Statistical discrepancies in intermediate data are not assessed and investigated.	Statistical discrepancies in intermediate data are rarely assessed and investigated.	Statistical discrepancies in intermediate data are assessed and investigated sometimes.	Statistical discrepancies in intermediate data are assessed and investigated most of the time.	Statistical discrepancies in intermediate data are always assessed and investigated.

Indicator 3.9 Statistical discrepancies and other potential indicators of problems in statistical outputs are investigated.

Question: Are systematic processes in place (such as checks of demographic data and data from previous years) for monitoring errors and omissions?
- Systematic processes are in place to monitor errors and omissions and address data problems.
- Results are checked against demographic data and other survey/census results.
- Data are compared with data from earlier years to examine reasonableness of year-to-year changes and trends.

Indicator 3.9	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	.25	.50	.75	1
Statistical discrepancies and other potential indicators or problems in statistical outputs are investigated.	There are no systematic processes (check demographic data; check previous years) in place for monitoring errors and omissions.	There are systematic processes (check demographic data; check previous years) in place for monitoring errors and omissions but they are rarely used.	There are systematic processes (check demographic data; check previous years) in place for monitoring errors and omissions but they are not applied consistently.	There are systematic processes (check demographic data; check previous years) in place for monitoring errors and omissions but results are not made public.	There are systematic processes (check demographic data; check previous years) in place for monitoring errors and omissions and the results are made public.

Indicator 3.10 Studies and analyses of revisions are carried out routinely and used to inform statistical processes.

Question: Are studies and analyses of revisions regularly assessed and analysis of preliminary versus revised data conducted in order to assess reliability of data? Are revision findings made public?
- Revisions to methodology are assessed regularly.
- Analysis of preliminary versus revised data is conducted for major data series to assess the reliability of the preliminary data and findings are taken into account.
- Revision findings are made accessible to the data users and compilers.

Indicator 3.10	Choose one response in the response matrix and clarify with comments whenever necessary				
	0	.25	.50	.75	1
Studies and analyses of revisions are carried out routinely and used internally to inform the processes.	Revisions to methodology are rarely or never made.	Methods are reviewed; no assessments of preliminary vs. revised data are made.	Methods are reviewed; preliminary vs. revised data are assessed; no feedback loop implemented; findings are not made public.	Methods are reviewed; preliminary vs. revised data are assessed; feedback loop implemented; findings are not made public.	Methods are reviewed; preliminary vs. revised data are assessed; feedback loop implemented; findings are made public.

Aspect 4. Serviceability (relevance, timeliness, and consistency)

The objective of assessing this aspect of quality is to determine the relevance, timeliness, and consistency of education statistics, as well as the revision policies associated with these issues. Based on the quick analysis of the bulleted items, please assign a score to each of the following seven indicators using the scoring table attached to each indicator. Indicate your rating by circling the appropriate score.

Indicator 4.1 Periodicity and timeliness: Periodicity follows dissemination standards.

Question: Are education statistics disseminated annually or at periods that follow internationally accepted good practices, as appropriate?
- Education statistics derived from the administrative school census are disseminated annually.
- The periodicity of other education statistics follows internationally accepted good practices.

Indicator 4.1	Choose one response in the response matrix and clarify with comments whenever necessary				
Periodicity follows dissemination standards.	0	.25	.50	.75	1
	Censuses of enrollment, teachers, schools and financial data are only produced every 5 or more years.	Censuses of enrollment, teachers, schools, and financial data are produced every 2–5 years.	Censuses of enrollment, teachers, schools, and financial data are produced every 2 years.	Census of enrollment is annual but census of teachers, schools, and finances are not produced annually.	Censuses of enrollment, teachers, schools, and financial data are produced annually.

Indicator 4.2 The timeliness of statistics follows internationally accepted good practices.

Question: Are administrative school census data and other education statistics disseminated in accordance with internationally accepted good practices?
- Statistics derived from the administrative school census are disseminated within 6–12 months after the beginning of school year.
- The timeliness of other education statistics follows internationally accepted good practices.

Indicator 4.2	Choose one response in the response matrix and clarify with comments whenever necessary				
Timeliness follows international dissemination standards.	0	.25	.50	.75	1
	Administrative school census data are available 6–12 months after the end of the school year.	Administrative school census data are available 0–6 months after the end of the school year.	Administrative school census data are available 6–12 months after the initiation of the school year.	Administrative school census data are available 2–6 months after the initiation of the school year.	Administrative school census data are available 2 months after the initiation of the school year.

Indicator 4.3 Consistency: Statistics are consistent within the dataset.

Question: Are all enrollment and administrative data regularly checked for consistency and crosschecked?

Consistency is measured in a simple way: The total reported should also be obtained by adding the components of such total.

- Accounting identities between aggregates and their components are observed for all involved data.
- Accounting identities between enrollments, repeaters, dropouts, and demographic data are observed.
- Statistics are crosschecked within the survey, across geographic areas and sub-groups of population.

Indicator 4.3	Choose one response in the response matrix and clarify with comments whenever necessary				
Statistics are consistent within the dataset.	0	.25	.50	.75	1
	No consistency or crosschecking done on the data.	Consistency checking done only for enrollment data and there is no cross-checking.	Consistency checking done only for enrollment data and crosschecking done regularly.	Consistency checking done only for administrative census data and crosschecking done regularly.	Consistency checking done for all data and crosschecking done regularly.

Indicator 4.4 Statistics are consistent or reconcilable over a reasonable period of time.

Question: Are consistent time series available for at least five years, and historical series reconstructed as possible when changes require? Are revisions and revision methods made public, and inconsistencies explained?

- Consistent time series data are available for an adequate period of time (at least five years).
- When changes in source data, methodology, and statistical techniques are introduced, historical series are reconstructed as far back as reasonably possible.
- Detailed methodological notes identify and explain the main breaks and discontinuities in time series, their causes, as well as adjustments made to maintain consistency over time.
- Any unusual changes in economic and demographic trends are explained in the analytical text included in the publication and in the database accessible to users.

Indicator 4.4	Choose one response in the response matrix and clarify with comments whenever necessary				
Statistics are consistent or reconcilable over a reasonable period of time.	0	.25	.50	.75	1
	Time series are available for less than 5 years; there are no procedures for revision of time series.	Time series are available for less than 5 years; there are procedures for revision of time series; the revision methods are not public; and inconsistencies are not explained.	Time series are available for more than 5–10 years; there are procedures for revision of time series; the revision methods are not public; and inconsistencies are not explained.	Time series are available for 5–10 years; there are procedures for revision of time series; the revision methods are public; and inconsistencies are explained.	Time series are available for more than 10 years; there are procedures for revision of time series; the revision methods are public; and inconsistencies are explained.

Indicator 4.5 Statistics are consistent or reconcilable with those obtained through other data sources and/or statistical frameworks.

Question: Are education statistics reconcilable with administrative data, census data, and socio-demographic data from other sources?
- Education statistics are reasonably reconciled with administrative data, census data, and socio-demographic data from other sources.

Indicator 4.5	Choose one response in the response matrix and clarify with comments whenever necessary				
Statistics are consistent or reconcilable with those obtained through other data sources and/or statistical frameworks.	0	.25	.50	.75	1
	Percent difference in primary and secondary education enrollment between school-reported figures and data from household surveys is larger than 30 percentage points.	Percent difference in primary and secondary education enrollment between school-reported figures and data from household surveys is between 21–30 percentage points.	Percent difference in primary and secondary education enrollment between school-reported figures and data from household surveys is between 11–20 percentage points.	Percent difference in primary and secondary education enrollment between school-reported figures and data from household surveys is between 5–10 percentage points.	Percent difference in primary and secondary education enrollment between school-reported figures and data from household surveys is lower than 5 percentage points.

Indicator 4.6 Revision policy and practice: Revisions follow a regular, well established, and transparent schedule.

Question: Are revisions of provisional estimates, methods, and outputs documented and made accessible to users, following an established schedule?
- Adequate documentation of revisions is included in the publication of the statistical series and in the database accessible to users.

Indicator 4.6	Choose one response in the response matrix and clarify with comments whenever necessary				
Revisions follow a regular and transparent schedule.	0	.25	.50	.75	1
	There are no revisions.	There are ad hoc partial formal revisions of provisional estimates, methods, and outputs. Documentation available to a restricted group.	There are annual partial formal revisions of provisional estimates, methods, and outputs. Documentation available to a restricted group.	There are documented formal revisions of provisional estimates, methods, and outputs every two years.	There are documented annual formal revisions of provisional estimates, methods, and outputs.

Indicator 4.7 Preliminary data and/or revised data are clearly identified and revisions are made public.

Question: Are preliminary and/or revised data clearly identified in public documents?
- Users are alerted that initially published data are preliminary and subject to revision.
- The revised data are disseminated with the same level of detail as previously published for the data being revised.
- Revisions to methodology are assessed and explained in the publication of the statistical series and in the database accessible to users.
- Analysis of preliminary versus revised data is published for major data series to allow assessment of the reliability of the preliminary data.

Indicator 4.7	Choose one response in the response matrix and clarify with comments whenever necessary				
Preliminary and/ or revised data are clearly identified.	0	.25	.50	.75	1
	No preliminary data are produced.	Preliminary and/or revised data are not identified.	Preliminary and/ or revised data are clearly identified but not made public.	Preliminary and/ or revised data are clearly identified but only a portion is made public.	Preliminary and/ or revised data are clearly identified in public documents.

Aspect 5. Accessibility

The objective of assessing this aspect of quality is to determine the extent to which education statistics are presented in a clear and understandable manner, whether forms of dissemination are adequate, and whether statistics are made available on an impartial basis. Based on the quick analysis of the bulleted items, please assign a score to each of the following nine indicators using the scoring table attached to each indicator. Indicate your rating by circling the appropriate score.

Indicator 5.1 Statistics are presented in a way that facilitates proper interpretation and meaningful comparisons (layout and clarity of text, tables, and charts).

Question: Are statistics presented in a way that facilitates proper interpretation and comparisons through effective use of layout, tables, charts, and clarity of text, and are data accessible for disaggregation?
- Education data are published in a clear manner; charts and tables are disseminated with the data to facilitate the analysis.
- Education data offer adequate details and time series.
- Analysis of current period estimates is available.
- Data are presented for different degrees of aggregation (e.g., school, region) and sub-components (e.g., by gender, by level of education, by age, private and public, full-time and part-time), and additional data (e.g., demographic, socioeconomic, geographic information) are included.

Indicator 5.1	Choose one response in the response matrix and clarify with comments whenever necessary				
Statistics are presented to facilitate proper interpretation and comparisons (layout, clarity of texts, tables, and charts).	0	.25	.50	.75	1
	No presentation of data outputs.	Data are not presented clearly.	Clear presentation of data; charts have no underlying data available; disaggregation of data is not presented.	Clear presentation of data; charts have underlying data available; disaggregation of data is not presented.	Clear presentation of data; charts have underlying data available; disaggregation of data is possible.

Indicator 5.2 Dissemination media and formats are adequate.

Question: Are data released in media and formats that are accessible?
- Data are first released via an information release, which is then followed by the release of a more comprehensive publication.
- Recently released data and longer time series can be accessed through an electronic database maintained by the agency producing education statistics.
- Annual education statistical yearbook can be made available and disseminated.

Indicator 5.2	Choose one response in the response matrix and clarify with comments whenever necessary				
Dissemination media and format are adequate.	0	.25	.50	.75	1
	During the last 5 years, data were not available electronically and there is no yearbook ready for dissemination.	Data are not available electronically, but there is a yearbook ready for dissemination.	During the last year, data were available electronically and there was a yearbook ready for dissemination.	During the last 2–4 years, data were available electronically and there was a yearbook ready for dissemination.	During the last 5 years, data were available electronically and there was a yearbook ready for dissemination.

Indicator 5.3 Statistics are released on a pre-announced schedule.

Question: Are statistics released according to a pre-announced schedule?
- Education statistics are released according to a pre-announced schedule.

Indicator 5.3	Choose one response in the response matrix and clarify with comments whenever necessary				
Statistics are released on a pre-announced schedule.	0	.25	.50	.75	1
	Data are not released.	There is no pre-announced schedule for data release.	There is a pre-announced schedule for data release and the data are released >6 months later.	There is a pre-announced schedule for data release and the data are released 0–6 months later.	There is a pre-announced schedule for data release and the data are released accordingly.

Indicator 5.4 Statistics are made available to all users at the same time.

Question: Are statistics released at the same time to all users?
- Education statistics are released simultaneously to all users on the date and/or time specified in the pre-announced schedule.
- If the press is briefed in advance, measures are taken to avoid release to the public in advance of the regular schedule.

Indicator 5.4	Choose one response in the response matrix and clarify with comments whenever necessary				
Statistics are made available to all users at the same time.	0	.25	.50	.75	1
	No data are released.	Some of the data are released to restricted users.	Most of the time, part of the data are released to all users simultaneously.	Most of the time, all of the data are released to all users simultaneously.	All data are released at the same time to all users.

Indicator 5.5 Statistics not routinely disseminated are made available upon request.

Question: Are there procedures in place so that statistics that are not routinely disseminated (but non-confidential) can be made available upon request?
- Non-published (but non-confidential) specialized tabulations (e.g., sub-aggregates of units of analysis) are made available upon request.
- Non-confidential micro-data files (e.g., with information permitting the identification of individual respondents removed) are available to permit analytical use by researchers and other users.
- The availability of non-published statistics and data, and the terms and conditions on which they are made available, are publicized.

Indicator 5.5	Choose one response in the response matrix and clarify with comments whenever necessary				
Statistics not rou-tinely disseminated are made available upon request.	0	.25	.50	.75	1
	Release of non-published data may compromise confidentiality.	Release of non-published data and non-confidential data is without controls.	Release of non-published data and non-confidential data is discretionary.	There are proce-dures in place for releasing non-published data and non-confidential data to a restricted group.	There are proce-dures in place for releasing non-published data and non-confidential data.

Indicator 5.6 Metadata accessibility: All metadata documentation is available, and differences from international standards are annotated.

Question: Is all metadata documentation (including information on concepts, definitions, classification and other methodology, data sources, and statistical techniques) made available to the public, and are deviations from internationally accepted standards well documented?

- Metadata, including information on concepts, definitions, classification and other methodology, data sources, and statistical techniques, are prepared and disseminated to the public.
- Deviations from internationally accepted standards, guidelines, or good practices are well documented in the metadata.
- The metadata is disseminated in a manner that facilitates its access (e.g., websites, statistical publications) and its availability is well publicized.
- Instances where statistical information for the subject area in question makes use of data pertaining to other subject areas and produced by other data producers are noted, and references are given to descriptions of their methodology and quality.

Indicator 5.6	Choose one response in the response matrix and clarify with comments whenever necessary				
Documentation on concepts, scope, classifications, basis of recording, data sources, and statistical tech-niques is available, and differences from internationally accepted stan-dards, guidelines, or good practices are annotated.	0	.25	.50	.75	1
	No metadata are available.	Metadata, including information on con-cepts, definitions, classifications, sources, methodol-ogy, and statistical techniques are incomplete and outdated.	Metadata, including information on con-cepts, definitions, classifications, sources, methodol-ogy, and statistical techniques are documented but outdated, and avail-able upon request.	Metadata, including information on con-cepts, definitions, classifications, sources, methodol-ogy, and statistical techniques are doc-umented, updated, and available upon request.	Metadata, including information on con-cepts, definitions, classifications, sources, methodol-ogy, and statistical techniques are documented, updat-ed, and available to public.

Indicator 5.7 Levels of detail are adapted to the needs of the intended audience.

Question: Is a regularly updated data catalog available so that users can request details of data according to their needs?

- A brochure has been prepared to inform general users about the statistical series.
- A comprehensive sources and methods document is produced and updated regular-ly to inform analysts and other users of statistics about how statistics are compiled.

Indicator 5.7	Choose one response in the response matrix and clarify with comments whenever necessary				
Levels of detail are adapted to the needs of the intended users.	0	.25	.50	.75	1
	No data catalog is produced.	Data catalog is available to selected users.	Data catalog is available so users can request detail of data according to their needs. Catalog is not updated annually but selected users have access to data.	Data catalog is available so users can request details of data according to their needs. Catalog is updated annually but just selected users have access to data.	Data catalog is available so users can request details of data according to their needs. Catalog is updated annually and data are accessible to users.

Indicator 5.8 Assistance to users: Contact points for each subject field are publicized.

Question: Do all statistical releases identify a contact person in case of required assistance, are data manuals and/or brochures produced to educate users, and is assistance to users monitored through periodic surveys?
- Prompt and knowledgeable service and support are available to users of statistics. All statistical releases identify specific individuals who may be contacted by mail, telephone, facsimile, or email.
- Documentation has been developed (e.g., brochures) to educate users of related datasets.
- Assistance to users is monitored through periodic surveys of users.

Indicator 5.8	Choose one response in the response matrix and clarify with comments whenever necessary				
Contact points for each subject field are publicized.	0	.25	.50	.75	1
	Statistical releases do not identify contact person.	Most statistical releases identify contact person in case of required assistance. No data manuals and/or brochures are produced to educate users and assistance to users is not monitored.	All statistical releases identify contact person in case of required assistance. For limited and hard to obtain data, manuals and/or brochures are produced to educate users and assistance to users is not monitored.	All statistical releases identify contact person in case of required assistance. Data manuals and/or brochures are produced to educate users and assistance to users is not monitored.	All statistical releases identify contact person in case of required assistance. Data manuals and/or brochures are produced to educate users and assistance to users is monitored though periodic surveys.

Indicator 5.9 Catalogues of publications, documents, and other services, including information on any charges, are widely available.

Question: Are catalogs of publications and services widely available and updated yearly, and do they include information about charges for placing orders and ordering assistance that is available?
- A catalog of publications, documents, and other services to users is available and updated each year.
- The prices of the statistical products and services are clearly disclosed and assistance is provided in placing orders.

Indicator 5.9	Choose one response in the response matrix and clarify with comments whenever necessary				
Catalogues of publications and other services, including information on any charges, are widely available.	0	.25	.50	.75	1
	Catalogues of publications and service are not available.	Catalogues of publications and services are available but not updated yearly. Prices of statistical products and services are not clearly disclosed.	Catalogues of publications and services are available and updated yearly. Prices of statistical products and services are not clearly disclosed.	Catalogues of publications and services are available and updated yearly. Prices of statistical products and services are clearly disclosed but assistance for placing orders is not available.	Catalogues of publications and services are available and updated yearly. Prices of statistical products and services are clearly disclosed and assistance for placing orders is available.

Aspect on methodological soundness removed

The original SABER EMIS protocol includes one aspect that focuses on the UNESCO Institute for Statistics (UIS) international standards. Because data specialists within the Federated States of Micronesia are required to apply standards set by the NDOE and agencies and organizations that oversee the distribution of funds to the states and the NDOE, such as JEMCO, this aspect is of limited application. The SABER tool is intended in part to provide a means to compare countries to one another; however, the purpose of this study is to provide states and the NDOE with information that allows comparison within the Federated States of Micronesia. Thus, whether international standards were applied provides little actionable information.

Methodological soundness

The objective of assessing this aspect of quality is to determine the degree to which the methodological basis for educational statistics follows internationally accepted standards, guidelines, and good practices. Based on the quick analysis of the bulleted items, please assign a score to each of the following three indicators using the scoring table attached to each indicator. Indicate your rating by circling the appropriate score.

Indicator 1 Concepts and definitions are in accord with standard statistical frameworks.

Question: Do the concepts and definitions used by the agency follow regionally and internationally accepted standards, guidelines, and good practices?
- The concepts and definitions follow methodologies recommended by UIS.

Indicator 1	Choose one response in the response matrix and clarify with comments whenever necessary				
Overall structure, concepts and definitions follow regionally and internationally accepted standards, guidelines, and good practices.	0	.25	.50	.75	1
	Structure, concepts, and definitions are inconsistent from year to year, without proper documentation, and without consistency with regional or international standards.	Structure, concepts, and definitions do not have proper documentation and may or may not be consistent with regional and international standards.	Structure, concepts, and some definitions have proper documentation and may or may not be consistent with regional and international standards.	Structure, concepts, and definitions have proper documentation but definitions do not conform with regional and international standards.	Overall structure, concepts, and definitions follow regionally and internationally accepted standards, guidelines, and good practices.

Indicator 2 Scope of education statistics are in accordance with international standards, guidelines, or good practices.

Question: Is the scope and conceptual development of education statistics sufficiently comprehensive in accordance with international standards, guidelines, and good practices?
- Education statistics are sufficiently comprehensive in scope and conceptual development to adequately describe the full performance of the education sector.
- Scope of statistics is adequate in terms of other relevant variables for analytical purposes.

Indicator 2	Choose one response in the response matrix and clarify with comments whenever necessary				
Scope is in accordance with international standards, guidelines, or good practices.	0	.25	.50	.75	1
	Scope of agency statistics covers less than 50% of UIS indicators.	Scope of agency statistics covers 50–70% of UIS indicators.	Scope of agency statistics covers 71–90% of UIS indicators.	Scope of agency statistics covers 91–100% of UIS indicators.	100% of OECD indicators are produced by the agency.

Indicator 3 Classification systems used are broadly consistent with internationally accepted standards, guidelines, or good practices.

Question: Are the classification systems used broadly consistent with international standards, guidelines, and good practices?

In general, countries define their own education systems but many of them also generate maps that align their own nomenclature with the International Standard Classification of Education (ISCED97) (http://www.unesco.org/education/information/nfsunesco/doc/isced_1997.htm).
- Classification of education is based on UIS ISCED97 and technical guidelines and manuals (e.g., level of education, public and private, full-time and part-time, trained and untrained).
- Classification of educational expenditure is based on UIS technical guidelines as well as the United Nations System of National Accounts.
- ISCED and other UIS standards and guidelines are applied consistently to statistics on the educational system, students, teachers and educational institutions, and educational expenditure.

Indicator 3	Choose one response in the response matrix and clarify with comments whenever necessary				
Classification systems are consistent with international standards, guidelines, or good practices.	0	.25	.50	.75	1
	ISCED standard is not applied.	Classification is in process.	Classification systems are broadly consistent with international standards, guidelines, or good practices except for students, teachers, and expenditures.	Classification systems are broadly consistent with internationally accepted standards, guidelines, or good practices except for expenditures.	Classification systems are completely consistent with internationally accepted standards, guidelines, or good practices.

In advance of the focus group session, participants were provided the following letter as an introduction to the proposed session and as a consent form for their signatures.

McREL   August 12, 2014

Focus Group Informed Consent Form

In its role as a U.S. funded educational laboratory in support of educational agencies of the Pacific Region, McREL International, a nonprofit research organization based in Denver, Colorado, is conducting a study of the education management information system (EMIS) in the FSM state of Pohnpei. You have been asked to take part in this study, which seeks to assess and benchmark the quality of this information system in Pohnpei. The study will be informed by collecting data on a number of indicators that will serve to describe the current state of this system.

Based on your knowledge of the data system in Pohnpei, you have been asked to participate in a focus group. You have also been asked to provide data codebooks, data collection protocols, statistical reports, and policy statements relevant to the indicators that serve to benchmark a management information system. Data from your focus group participation and the documents you provide will be used to inform the design or redesign of the system.

Participation in this focus group will last approximately 2 days, about 6 hours per day. The conversation will include questions about your judgment regarding aspects of quality in the Pohnpei EMIS, including statistical policies and practices, data collection procedures, utility or serviceability of the statistics, and the presentation and dissemination of findings. There are no known risks related to your participation in the focus group. Your participation is completely voluntary. You may choose not to answer any particular question. You may leave the focus group at any time.

If you choose to participate in the focus group, notes from the conversation will be captured and the conversation may be audio recorded. Although we will not link your name with specific comments you make during the focus group, due to the nature of the group conversation we are unable to guarantee confidentiality. However, your name will not be associated with any statements. Instead, comments will be summarized. We may directly quote what is said in a report, but we will not use the name of the person making the comment. Any documents you provide will not be attributed to you as the source. Files from the focus group will be kept in a safe place during the study and destroyed after the end of the audit. Your name will not appear in the report without your consent.

There are two exceptions to the conditions of privacy discussed in the above paragraph. If information is shared about harm or threat of harm to self or others, or child abuse and neglect, it is required by law that this be reported to the proper authorities. In addition, should any information in this audit be the subject of a court order or lawful subpoena,

the research staff may be required to comply with the order or subpoena. However, please be assured that the purpose of the focus group is to benchmark current practices in the data management system in Pohnpei. We do not intend to discuss child abuse, threats, or matters of legality. There are no anticipated direct benefits to you for participating in this audit, but it should contribute to the improvement of the data management system on Pohnpei.

Should you have any questions about this audit or your rights as a participant, you may call Lou Cicchinelli, Senior Fellow, at 303–632–5509 or email at lcicchinelli@mcrel.org. Please sign below if you understand and agree to participate.

I have read (or had someone read) this form and understood the descriptions of the study. I have asked for and received a satisfactory explanation of any language that I did not fully understand. I agree to participate in this study, and I understand that I may withdraw my consent at any time. I have received a copy of this consent form.
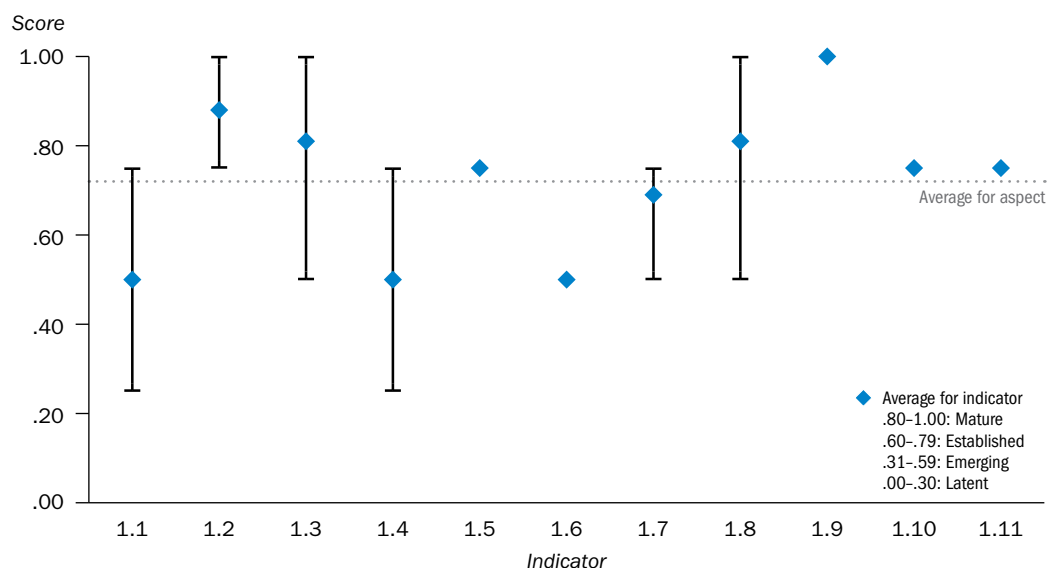
_____

NAME (Please Print)

_____

Date

Appendix D. Participant responses by indicator and aspect of system quality

This appendix includes the average responses of the five focus group participants for each indicator associated with the five aspects of system quality. Some indicators showed a range of scores (for example, indicator 1.1 in figure D1), while others showed complete unanimity among the data specialists (for example, indicator 1.6 in figure D1). It is not possible to know with any certainty the cause for a score disparity on any indicator, but it is known that the raters came from different perspectives because of their roles and responsibilities and, in fact, may have been considering very different aspects of the system in their responses. For example, the person in charge of the special education data answers to a different set of data requirements and produces different statistical reports than the representative from testing, or the data specialist working with overall department data.

Figure D1. Data specialists' scores for 11 indicators placed prerequisites of quality at the established benchmark level

Score

Average for aspect

Average for indicator
.80–1.00: Mature
.60–.79: Established
.31–.59: Emerging
.00–.30: Latent

Indicator

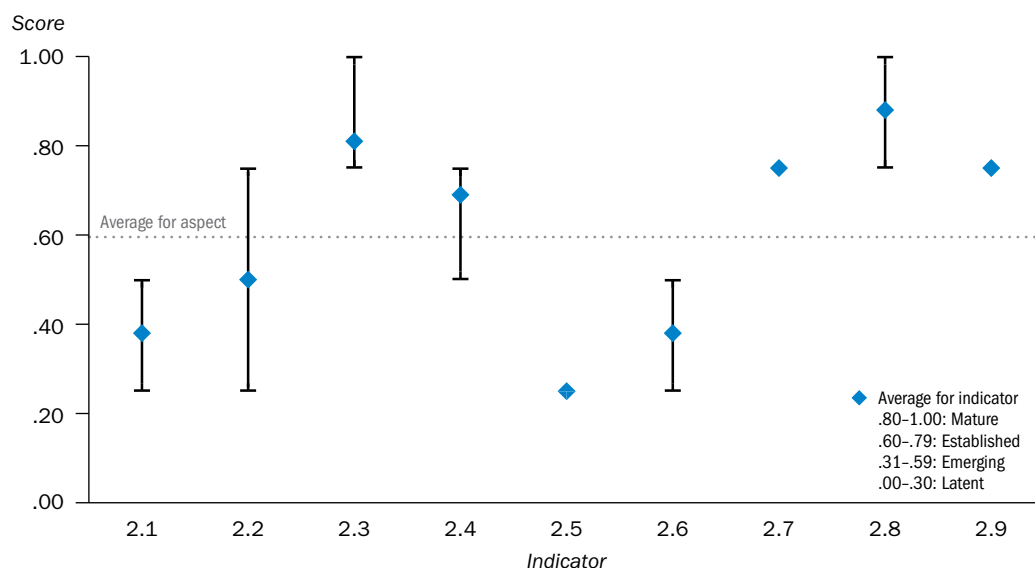**Note.** For descriptions of indicators, see table D1.

Source: Authors' calculations based on participant responses to the revised System Assessment and Benchmarking for Education Results focus group protocol in 2014.

Table D1. Indicators for aspect 1: Prerequisites of quality

Indicator	Indicator description
Legal and institutional environment	
1.1	The responsibility for collecting, processing, and disseminating statistics is clearly specified.
1.2	Data sharing and coordination among data-producing agencies are adequate to facilitate data sharing and cooperation between the education statistics agency and other data producing agencies.
1.3	Respondents' data are always confidential and used only for statistical purposes. Also, the confidentiality of individual respondents' data is guaranteed and that guarantee is widely known.
1.4	There is a legal mandate that ensures that individuals give their response to statistical or survey questions.
Human and material resources are adequate for the task	
1.5	Staff, financial, and computing resources are commensurate with statistical programs of the education data agency.
1.6	Processes and procedures are in place to ensure that resources are used efficiently.
1.7	Education statistics meet user needs and those needs are monitored continuously.
1.8	Processes are in place to focus on data quality, on monitoring the quality of the collection, processing and dissemination of education statistics, and on the inclusion of data quality in statistical planning.
1.9	Processes are in place to monitor the quality of the collection, processing, and dissemination of statistics.
1.10	Processes are in place to deal with quality considerations in planning the statistical program.
1.11	Mechanisms exist for addressing new and emerging data requirements.

Source: World Bank, 2011.

Figure D2. Data specialists' scores for nine indicators placed integrity of education statistics at the established benchmark level

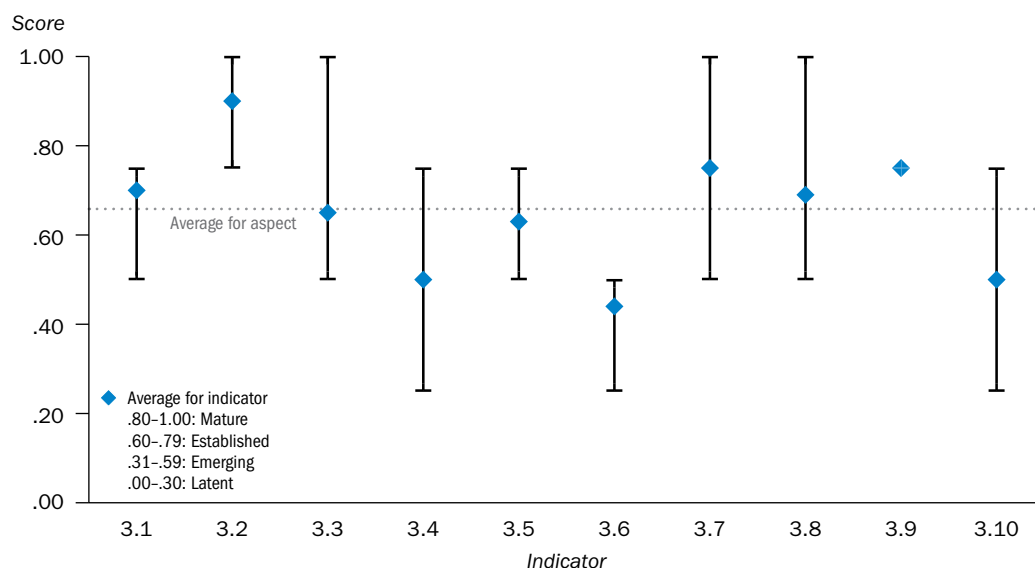**Note:** Indicators are described in table D2.

Source: Authors' calculations based on participant responses to the revised System Assessment and Benchmarking for Education Results focus group protocol in 2014.

Table D2. Indicators for aspect 2: Integrity of education statistics

Indicator	Indicator description
Statistical policies and practices are guided by professional principles	
2.1	Statistics are impartial. Impartiality is assured because the terms and conditions under which educational statistics are produced guarantee the professional independence of the agency.
2.2	Professionalism is actively promoted and supported within the data-producing agency.
2.3	Choices of sources and statistical techniques as well as decisions about disseminations are informed solely by statistical considerations.
2.4	The appropriate statistical entity is entitled to comment on erroneous interpretation and misuse of statistics.
Statistical policies and practices are transparent	
2.5	The terms and conditions under which statistics are collected, processed, and disseminated are available to the public.
2.6	Internal governmental access to statistics prior to their release is publicly identified.
2.7	Products of statistical agencies/units are clearly identified as such.
2.8	Advance notice is given of major changes in methodology, source data, and statistical techniques.
Policies and practices in education statistics are guided by ethical standards	
2.9	Guidelines for staff behavior are in place and are well known to the staff.

Source: World Bank, 2011.

Figure D3. Data specialists' scores for 10 indicators placed accuracy and reliability of education statistics at the established benchmark level

Score

Average for aspect

◆ Average for indicator
.80–1.00: Mature
.60–.79: Established
.31–.59: Emerging
.00–.30: Latent

Indicator

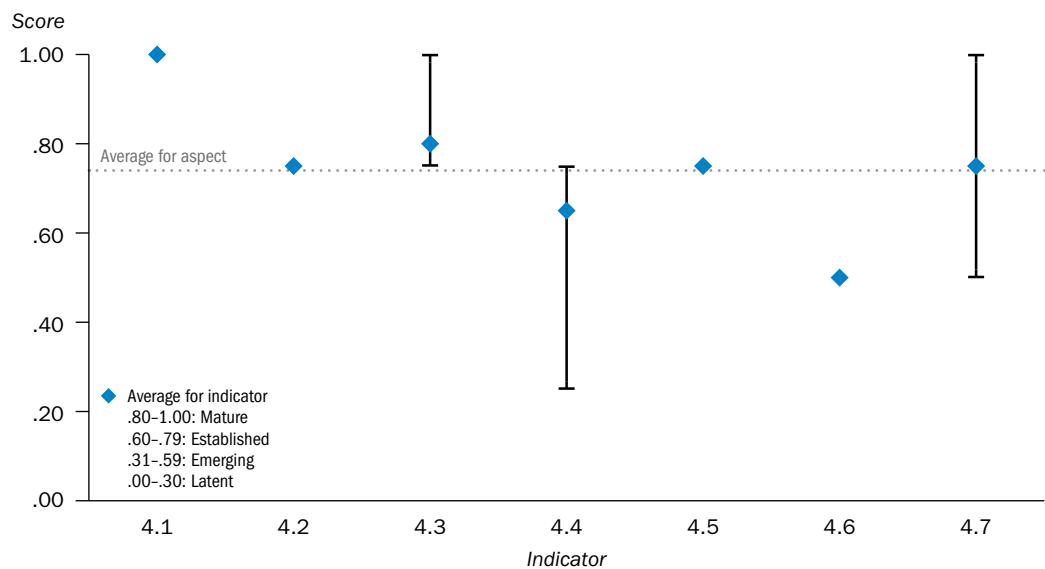**Note:** Indicators are described in table D3.

Source: Authors' calculations based on participant responses to the revised System Assessment and Benchmarking for Education Results focus group protocol in 2014.

Table D3. Indicators for aspect 3: Accuracy and reliability of education statistics

Indicator	Indicator description
3.1	Source data are obtained from comprehensive data collection programs that take into account country-specific conditions.
3.2	Source data reasonably approximate the definitions, scope, classifications, valuation, and time of recording required.
3.3	Source data are timely.
3.4	Source data—including censuses, sample surveys, and administrative records—are routinely assessed for coverage, sample error, response error, and non-sampling error; the results of the assessments are monitored; and corrections to education statistics methods are made and published.
3.5	Data compilation employs sound statistical techniques to deal with data sources.
3.6	Other statistical procedures employ sound statistical techniques.
3.7	Assessment and validation of intermediate data and statistical outputs: Intermediate results are validated against other information where applicable.
3.8	Statistical discrepancies in intermediate data are assessed and investigated.
3.9	Statistical discrepancies and other potential indicators of problems in statistical outputs are investigated.
3.10	Studies and analyses of revisions are carried out routinely and used to inform statistical processes.

Source: World Bank, 2011.

Figure D4. Data specialists' scores for seven indicators placed serviceability at the established benchmark level
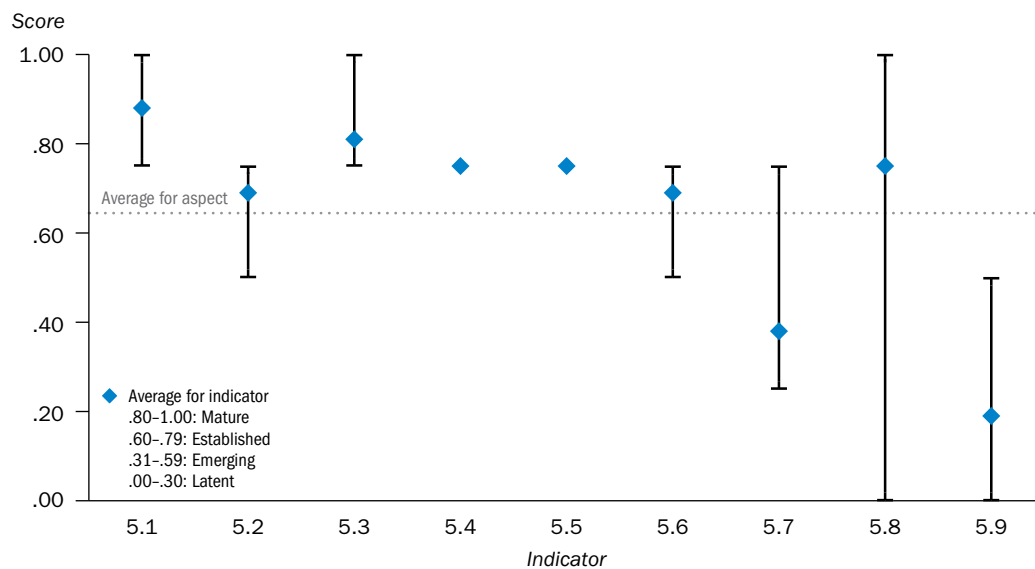

Note: Indicators are described in table D4.

Source: Authors' calculations based on participant responses to the revised System Assessment and Benchmarking for Education Results focus group protocol in 2014.

Table D4. Indicators for aspect 4: Serviceability

Indicator	Indicator description
4.1	Periodicity and timeliness: Periodicity follows dissemination standards.
4.2	The timeliness of statistics follows internationally accepted good practices.
4.3	Consistency: Statistics are consistent within the dataset.
4.4	Statistics are consistent or reconcilable over a reasonable period of time.
4.5	Statistics are consistent or reconcilable with those obtained through other data sources and/or statistical frameworks.
4.6	Revision policy and practice: Revisions follow a regular, well established, and transparent schedule.
4.7	Preliminary data and/or revised data are clearly identified and revisions are made public.

Source: World Bank, 2011.

Figure D5. Data specialists' scores for nine indicators placed data accessibility at the established benchmark level

Note: Indicators are described in table D5.

Source: Authors' calculations based on participant responses to the revised System Assessment and Benchmarking for Education Results focus group protocol in 2014.

Table D5. Indicators for aspect 5: Accessibility

Indicator	Indicator description
5.1	Statistics are presented in a way that facilitates proper interpretation and meaningful comparisons (layout and clarity of text, tables, and charts).
5.2	Dissemination media and formats are adequate.
5.3	Statistics are released on a pre-announced schedule.
5.4	Statistics are made available to all users at the same time.
5.5	Statistics not routinely disseminated are made available upon request.
5.6	Metadata accessibility: All metadata documentation is available, and differences from international standards are annotated.
5.7	Levels of detail are adapted to the needs of the intended audience.
5.8	Assistance to users: Contact points for each subject field are publicized.
5.9	Catalogues of publications, documents, and other services, including information on any charges, are widely available.

Source: World Bank, 2011.

Note

1. This report documents a study that was replicated in the four states of the Federated States of Micronesia: Chuuk, Kosrae, Pohnpei, and Yap. Thus, although the data and findings naturally differ from one report to the other, the explanation of why the study was done, the review of relevant literature, and the description of methods are virtually the same in each report.

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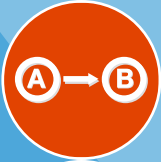
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