# Analyzing the Information Gathered


*Office of Inspector General*
*Office of Evaluation and Inspections*

# Table of Contents

# Introduction

*Analysis is one of the most important steps in completing any Program Inspection, and analyzing information is therefore one of the most important tasks for OEI staff to master. It is no accident that most Inspections staff are classified as part of the GS-345 series of Program Analysts.*

*Let us have no illusions, though—analysis is a complex process with many steps. To reduce some of the complexity, this Guide is organized into four separate sections. First is a discussion of the eight principles which guide the analysis of all Inspections. Second is a detailed discussion of the 17 suggested steps for analyzing Inspection information. Third are references for additional reading on several different aspects of analysis. And fourth is a listing of specific techniques for conducting an analysis.*

# Guiding Principles for Analyzing Inspection Information

The following eight guiding principles apply to all analyses of all Program Inspections. Each is discussed in greater detail below.

1. Creative insights are the key to an effective analysis;
2. Each analysis is unique;
3. Analysis occurs throughout an Inspection, not just at the end;
4. Analysis is an evolving, dynamic process;
5. It is essential to develop an initial plan for analyzing the information gathered;
6. The analyses themselves should be as simple as possible;
7. Analysis takes time and cannot be rushed; and
8. Analysis is best done collaboratively, not in solitude.

First, *creative insights* are the key to an *effective analysis.* Creative insight is the ability to "turn the kaleidoscope" or to "stir the stew" in a different way and to see Inspection findings from a new perspective. Insight is also the ability to find new ways to look at findings, to re-order their importance, to cast a new light on them, or to put a new template over them. A creative insight into the meaning of findings is often the difference between a routine Inspections report and a valuable contribution to the Department.

While insightfulness is to some degree an innate ability, there are ways to stimulate it. For example, Inspections staff often discuss and encourage the value of insights, engage in specific exercises to generate new insights, and make explicit efforts to develop metaphors to help interpret Inspection findings.

Second, *each analysis is unique.* Since each Inspection is uniquely focused on particular purposes, objectives, and issues of interest, the analysis of each Inspection should also be uniquely focused. Furthermore, different Inspections often gather different types of information (e.g., existing computerized data, interviews with key informants, personal observations and tests of systems—see Guide #2). As a result, each analysis has to be uniquely tailored to fit each Inspection.

On a practical level, this means that there are very few standard rules or automatic decisions for Inspections staff to follow when they analyze information. Instead, Inspections staff have to be aware of the many possibilities for analysis and to choose options which best fit each particular Inspection. This is why an Inspection analysis is as much art as science: it involves many choices and requires much flexibility and creativity.

Third, *analysis occurs throughout an Inspection, not just at the end.* While some people may think of analysis as the sequential step which follows information gathering, this is not true. Analysis is involved from the first day of pre-Inspection, when we analyze the possible issues involved and select those to be studied. It continues in the design stage, when we analyze possible types and sources of information and select those to be tapped.

Analysis is certainly apparent during staff training, when we analyze the possible responses staff might receive and instruct them on responses to pursue, to clarify, etc. Also, a great deal of analysis occurs while gathering information, as we will see later in this guide. Finally, much of the analysis occurs after the information has been gathered. But simply because this represents the bulk of the analysis is no reason to forget that important parts of the analysis process occur long before this stage of the Inspection.

Fourth, precisely because analysis does occur throughout an Inspection, *analysis is an evolving, dynamic process.* Even though it is important to think about analysis from the beginning and to have an analysis approach in place from the start (see principle #4 below), it is equally important not to bind ourselves to this approach too slavishly. It may be necessary to depart from the original plan and to develop a new approach as the Inspection unfolds. If so, we should be open to pursuing new directions and conducting new analyses.

But while there is value in allowing the analysis to evolve as the Inspection unfolds, how can this dynamic process be managed? How can we walk the fine line between clinging too rigidly to our original plan vs. spinning off onto the many interesting tangents which always arise during an Inspection? Two thoughts might help.

One is to constantly re-assess the original analysis approach. Rather than accepting this approach as a given, continually ask if it still makes the most sense or if a variation would be better. Also, constantly recall the purpose and context of the Inspection. Why is the Inspection being done? What actions, plans, and changes are occurring around these issues? What information could the Inspection provide to inform the Department in useful ways?

The fifth principle guiding our analysis activities is that, even though the analysis of an Inspection is an evolving process, *it is essential to develop an initial plan for analyzing the information gathered.* It is easy to make one of two common mistakes: either to assume that the proper analyses will become obvious as the information begins to accumulate, or to assume that we can analyze everything. The OEI analysts know how easily one can become caught in a morass of information and potentially interesting analyses, and they realize the value of an analytic road map, even if they opt to detour now and then.

The OEI Procedures Manual also recognizes the importance of an up-front analysis plan, since it requires that the "methods of analysis" be specified in the Inspection design. This requirement acknowledges that careful thought, not specific techniques, is the key to an effective analysis. There is always time to determine appropriate techniques once the logic of the analysis is thought out, but techniques are ineffective without careful thought.

One useful metaphor is to think of analysis as archaeology. In archaeology, researchers uncover findings in layers, starting with a general pattern of findings and proceeding downward to more specific findings. For example, archaeologists might first determine that a city existed in a certain area, then that the city's boundaries were in certain spots, then that buildings were located in various places, then that the buildings held various objects, and finally that certain materials were buried under each building. Drawing on their experience and previous findings, the archaeologists explore to different depths in different parts of the city.

So it is with a Program Inspection. The first analyses often present a general picture of the overall area—what is happening from a broad perspective. Additional analyses are then conducted to "dig deeper" into specific, promising areas. Finally, a few of these specific areas are singled out for detailed analysis. An OEI analysis plan often proposes such a layered approach of conducting first-level analyses, second-level analyses, and so on.

Sixth, even though the logic of the analyses may be complex, *the analyses themselves should be as simple as possible.* Program Inspections are certainly not intended for researchers, although many Inspections become valuable resource documents for various research units. Instead, Inspections are intended for top-level decision makers, and they should be both credible and understandable to those audiences. Complex, sophisticated analysis techniques are rarely understood at this level, and these types of analyses rarely have policy impact on the Department.

This principle does not imply that Inspections staff study only simple issues or that they study issues only in simple ways. Far from it—Inspections staff are increasingly tackling complex issues which require increasingly sophisticated Inspection methods. In fact, Inspections staff now employ analysis methods which rival the methods used by the Department's traditional research units.

This principle does recognize, however, that Inspections staff conduct the simplest analysis which is appropriate for the situation. If complex analyses are required, then Inspections staff conduct those analyses. Afterwards, though, they might also conduct a conceptually simpler, but equally appropriate, analysis for the benefit of the policy audience. If the results converge, Inspections staff can then present the simpler analysis "like the skilled acrobat who makes the most dazzling moves look easy."

Since analysis is so important to an Inspection, it is not surprising that our seventh guiding principle is that *analysis takes time and cannot be rushed.* Naturally the analysis should be conducted as quickly as possible, since Program Inspections aim to provide information quickly. And for those Inspections driven by upcoming decisions, the time available for analysis may be even less than normal.

Under normal circumstances, though, it takes time to analyze information carefully. The OEI officials recognize this need for patience, and they use colorful analogies to describe it. One talks of needing to "stir the stew," another of needing to "play with the data," another of needing to "walk around the scene," and still another of needing to "turn the kaleidoscope" to rearrange the patterns. These clever analogies all deliver the same message: Inspections staff need to immerse themselves in the information during analysis, and time for this simply cannot be cut short.

Eighth, because "stirring the stew" requires that we look at the information gathered from many different perspectives, *analysis is best done collaboratively, not in solitude.* Brainstorming, give-and-take, mutual critiquing, "Devil's advocating"—these are the hallmarks of effective analysis, and these processes are done best when multiple analysts are involved.

There are at least two different ways to build a collaborative analysis. The first is to create a team approach by assigning groups of Inspections staff to work together on different Inspections. Even if OEI workloads require that single individuals be assigned primary responsibility for specific Inspections, other analysts can still be brought together for active collaboration during the analysis of each study.

Inspections staff can also collaborate with persons *outside* OEI who have been identified during preinspection as knowledgeable and involved in the issues. This might even include an informal brainstorming group which meets regularly to discuss the information being gathered, its implications, and next steps. Some of these advisors might come from other HHS components, and some might come from other Federal agencies, Congressional staff, or industry associations or advocacy groups.

# Suggested Steps for Analyzing Inspection Information

As we have seen, each Inspection analysis is unique. Because of this, Inspections staff should creatively tailor their analysis to fit each situation. In this sense, it is not possible to discuss *required* steps to analyze an Inspection, since no two analyses are identical.

On the other hand, there are certain *suggested* steps which are typically useful for an Inspection analysis. This Guide categorizes 17 suggested steps into analysis *before* gathering information, analysis *while* gathering information, analysis *between* information-gathering activities, and analysis *after* gathering information. In addition, analysis after gathering information is further divided into five separate phases: (1) debriefing staff, (2) preparing the raw information, (3) reducing the raw information into preliminary findings, (4) displaying the preliminary findings, and (5) interpreting and verifying the findings.

# Analysis Before Gathering Information

It may seem strange to discuss "analysis before gathering information." After all, how can that be? How can we analyze what we do not yet have? As we see below, decisions made at this point greatly influence the type of Inspection findings which result, so these decisions are clearly a part of the analysis process.

### *Step #1: Establish How the Relevant Concepts Will Be Measured.*

Every Program Inspection, no matter what the issues being studied, evaluates certain aspects of a program or activity. For example, one Inspection might evaluate the "performance" of certain Departmental systems and another might evaluate the beneficiaries' "satisfaction" with certain services. In each of these situations, Inspections staff should first determine how they plan to measure "performance" or "satisfaction."

The difficulty is that neither of these aspects can be viewed directly. The performance of a system to detect patient abuse in nursing homes, for example, is not immediately obvious to a casual observer. Instead, performance must be assessed by running tests or simulations, examining records or documents, making observations, interviewing knowledgeable persons, or using other information-gathering methods discussed in Guides #2 and #4. This process of deciding how to measure performance is very much a part of analysis, since these decisions directly influence what information will be available from the Inspection.

For example, if staff rely on existing documents, they are deciding that the analysis will focus only on past performance (since documents only capture what has already occurred) and only on those aspects of performance which someone else has decided are worthy of reporting. On the other hand, if staff rely on personal observations or tests, they are focusing the analysis only on current performance, and they might inadvertently overlook important aspects of performance.

There are several ways Inspections staff can maximize the accuracy of their measurements and, at the same time, minimize their chances of biasing the information. For example, Inspections staff might:

- Include the most direct method possible when taking measurements. This implies running tests or simulations of system performance and interviewing beneficiaries about their satisfaction levels, as opposed to relying exclusively on existing documents or perceptions of others.
- Use multiple methods of measuring the relevant concepts. Usually it is quite feasible both to run tests *and* to examine written documents. The different information provided by each method is almost always well worth the additional effort.
- Consider developing "proxy indicators" for hard-to-measure concepts such as satisfaction. These proxy indicators, such as frequency of return and written complaints, are less straightforward than direct interviews, but they can sometimes be more revealing.

### *Step #2: Set Criteria or Standards for "Acceptable Levels" of Each Concept.*

Once Inspections staff decide how to measure the concepts being studied, they should establish benchmarks against which those measurements will be compared. How good must performance be before it is good enough? How satisfied must beneficiaries be before they are sufficiently satisfied? The answer to this question can seriously influence how Inspections analyses are interpreted.

For example, a local agency was attracting 30 percent of its high-risk youth into specialized drug abuse sessions. The agency was feeling badly about this level of performance, since its original plan was to attract over 75 percent. However, the agency then learned that other agencies across the country were averaging less than a 10 percent attendance rate. Suddenly the 30 percent level looked quite respectable when compared to this new benchmark. To avoid confusion, Inspections staff might:

- Establish benchmarks for "acceptable performance" prior to gathering any information. Sometimes these benchmarks are established by statute or by regulation; acceptable error rates for various State-level activities are an obvious example. At other times HHS programs have established and published their own goals for "success," and these can easily be obtained from the program.

At other times no benchmarks exist, and in these cases Inspections staff should tread carefully. Inspections staff might:

- Meet with program officials and others involved in the Inspection and jointly agree upon success criteria to be applied. (Incidentally, if this is a new exercise for program officials, they often find it helpful in ways beyond interpreting the Inspection.)

If it is not possible to establish criteria collaboratively, Inspections staff might:

- Develop, in as close a collaboration with program officials and staff as possible, those benchmarks which appear to be most reasonable. Share these planned benchmarks with program officials and ask for their reactions. At a minimum, this process documents that Inspections staff have made a good-faith effort to set performance criteria in a cooperative manner, and reactions from the program might also improve the criteria.

Of course, there is no rule that only one criterion can be established for each aspect of performance. Several different criteria could be established, and this is often preferable. For example, the local agency discussed above could compare its performance with both its original goal (75 percent) *and* the national average (10 percent). In fact, using both criteria provides a more complete assessment of performance than does either criterion alone, so Inspections staff might:

- Establish multiple criteria for successful performances. Include among these criteria any mandated levels, actual plans of the program, past performance levels, ideal performance levels, and any other benchmarks which help to place the performance into its proper perspective.

Whatever benchmarks are determined and however they are established, the criteria should be clearly specified at the beginning of the Inspection. Inspections staff might:

- Include all benchmarks for all aspects of performance in the initial design of the Inspection. Indicate clearly what it will mean if performance falls above or below each of these criteria. Indicate especially at what levels performance will be judged to be "highly effective," "adequate," or "ineffective."

## *Step #3: Develop an Initial Analysis Plan.*

As principle #4 indicated, it is important that Inspections staff develop, before gathering information and even before designing information-gathering instruments, an initial analysis plan. This plan, even though it must be developed during the very busy phase of Inspection design, is well worth the effort involved. Without it, Inspections staff might later find themselves caught in a "sea of facts" with no compass to point the proper direction.

This plan is useful in several ways. It helps to ensure that all analyses flow directly from the Inspection's initial purpose and objectives. Inspections staff might:

- Review the original purpose and objectives of the Inspection and tie all analyses to those original aims. Show how each item of information gathered will be used to produce information directly related to the purpose or objectives. If any items cannot be used in this way, consider eliminating them from the Inspection.

The analysis plan helps to ensure a logical, step-by-step approach to information gathered. Inspections staff might:

- Specify a detailed line of inquiry which will be followed as the information is analyzed. This line of inquiry might follow the layered, archeological model suggested in the fourth guiding principle. If so, it would indicate what simple analyses will be conducted first, what areas are then likely to be analyzed in greater depth, etc.

The analysis plan helps to ensure that Inspections staff gather all information needed for the analysis. Inspections staff might:

- Detail, on an item-by-item basis, exactly what analyses will be done and why. By listing these analyses, and by indicating what items of information are needed for each analysis, Inspections staff can see if all items are in fact being gathered. If not, the necessary additions can be made to the draft instruments.

## *Step #4: Conduct a "Trial Run" of the Analysis Plan.*

Once the analysis plan has been developed, Inspections staff should verify that the analysis will, in fact, produce the types of findings needed from the Inspection. Note that we say the proper types of findings, not the proper findings. To suggest in advance what *findings* are proper is to bias the Inspection. But to recognize that certain *types* of findings are needed is simply to realize that all Inspections are focused to provide certain types of information.

This trial run can be done theoretically or with "dummy" data. Under the first approach, Inspections staff pretend that information has been gathered and analyzed, and they detail what types of findings are available. They then ask themselves (and possibly their intended audiences) if these types of findings satisfy the purpose and objectives of the Inspection. Since it is best to approximate reality as closely as possible, Inspections staff might:

- Prepare in advance the exact format (i.e., empty shell) of any tables, charts, figures, or graphs which the analysis will produce. Naturally these formats will be empty until information is gathered and analyzed, but they show the *types* of findings which will be produced. Ask the intended audiences to verify that these formats, once filled in, will in fact provide the information needed from the Inspection.

A second, better approach actually tests the analysis plans as fully as possible. Using this approach, Inspections staff generate a small amount of imaginary information of the type which could reasonably be gathered during the Inspection. For example, Inspections staff might:

- Generate random numbers to simulate numerical responses to written surveys or existing data bases, generate reasonable answers to simulate responses to open-ended discussions, etc. Then treat this imaginary information exactly as you plan to treat real information gathered during the Inspection: code it, enter it into computers for analysis, analyze it, and present the findings the same ways as planned.

This second approach has all the advantages of the theoretical approach, but it has the extra advantages of testing whether the planned coding schemes, data entry procedures, statistical analysis packages, and reporting formats work as expected. If not, Inspections staff can make changes before they begin to use the faulty procedures.

## *Step #5: Develop Instruments to Gather the Information Needed for the Analysis.*

Once the analysis plan is completed, Inspections staff can develop instruments for gathering the needed information. These instruments should not be finalized until after the analysis plan is set, because the analysis plan will indicate (a) any necessary items of information which have accidentally been omitted from the instruments, and/or (b) any unnecessary items of information which have needlessly been included and which can be removed.

Guide #4 discusses OEI methods for gathering information, including narrative vs. numerical information, open-ended vs. closed-ended response choices for discussion questions, and recording information onto paper instruments vs. entering directly into computerized data bases. For this guide, let us simply say that the choices made while developing information-gathering instruments have a direct and irreversible impact on the analyses which can later be conducted on that information. Inspections staff might:

- Consider very carefully exactly what types of analyses are needed when developing information-gathering instruments. Ensure that both the content and the format of the information gathered is compatible with the analyses planned for later.

# Analysis While Gathering Information

Just as it may have seemed strange at first to discuss "analysis before gathering information," so may it also seem strange to discuss "analysis while gathering information." After all, isn't the information-gathering phase the very time when Inspections staff should *not* be analyzing? Isn't this the time to drop all considerations of what the information will eventually tell us and focus exclusively on gathering the information in a completely objective manner?

The answer is both yes and no. Yes, Inspections staff should certainly focus on gathering information during this phase, and yes, they should worry less about what that information will ultimately reveal. But no, Inspections staff should not "simply sponge up" whatever information is provided with no regard for its accuracy or importance. Assessing the quality of information being gathered is an important part of gathering that information in the first place.

### *Step #6: Analyze the Accuracy and Importance of Information Being Gathered.*

During the information-gathering phase of an Inspection, OEI staff encounter a great deal of information. This can include existing documents or reports to be reviewed, existing data bases to be tapped, situations to observe, and persons to meet and discuss with. Each of these sources provide information, and much of this information is very important.

On the other hand, some of this information is less important, and some might even be inaccurate. How should this lower-quality information be treated? Should it be recorded, coded, entered, and analyzed exactly like the important and accurate information? No, for this would skew the analyses and distort the Inspection findings. But who can best distinguish between higher-quality and lower-quality information?

An analogy with law enforcement might be helpful. Many of us unfamiliar with the reality of the law enforcement system might believe that the most important actor in law enforcement is the judge who hears cases and makes decisions. After all, doesn't the judge decide whether the accused is innocent or guilty, and doesn't the judge determine the proper punishment?

This is true, but a far more important actor than the judge is the average police officer on the street. While the judge can only deal with the cases which come to him or her, the local police officer has almost total control over what cases enter the system and which are let off with only a warning or are ignored. In the grand scheme of law enforcement, judges may decide cases, but police officers determine what's important enough to decide in the first place.

So it is with Program Inspections. True, a technical expert might ultimately conduct sophisticated analyses on the information gathered in order to "judge" its findings. But this expert can only analyze information provided by those who gathered the information in the first place. Front-

line staff, the ones gathering information from a variety of sources, must first decide what is worthy of analyzing (and with what caveats) before the technical analyst can complete his or her role.

These front-line Inspections staff have to decide how (a) accurate, (b) informed, and (c) relevant is each particular item of information. Accuracy is judged differently for different types of information and can involve cross-checking information between reports, verifying numbers with knowledgeable respondents, or assessing the plausibility, the detail, the documentation, the consistency, and the overall ring of truth of discussions. Inspections staff also keep in mind the particular biases and incentives for information to be skewed in one direction or another.

For assessing how informed a source is, Inspections staff face an interesting task. Certain sources—whether those be records, documents, data files, or individual respondents—are simply more informative than other sources. For example, a draft report might well be more informative than the final version, since it is not inconceivable that important information might have been revised from one version to the next.

Similarly, hospital discharge planners with 20 years' experience have a greater depth of knowledge and perspective than do new planners beginning their first week. If both planners can be enticed to talk freely, the experienced planner's comments would probably be more informative, at least on most issues.

Yet an analysis, unless it makes a special effort to distinguish between sources, might analyze the information provided by the less-informed report or planner identically as the information provided by the more-informed report or planner. In other words, the analysis might "weight" the information equally, even though it might be more appropriate to give additional credence to the more informed source. In order to weight information appropriately, Inspections staff might:

- Develop, before information-gathering begins, explicit criteria for assessing the apparent accuracy and informativeness of sources. Train all staff on these criteria and use practice sessions to ensure a full understanding.
- Rate the apparent accuracy and informativeness of sources, either by categories (e.g., apparently highly accurate or informed, average, or apparently not accurate or informed) or by numerical ratings (e.g., a 0-10 scale for apparent accuracy or informativeness).
- Use these ratings to determine if different patterns of findings are observed from sources which are more or less accurate or informed.

Regarding the relevance of information, Inspections staff might:

- Generally err in the direction of including information if its relevance is uncertain. As principle #4 noted, analysis is an evolving, dynamic process, and unexpected information can change the direction of this analysis in important ways. But this unexpected information will only be gathered if Inspections staff are receptive to spotting, recording, and thinking about it.

# Analysis Between Information-Gathering Activities

Even persons unconvinced that analysis begins before—or even while—information is being gathered recognize that analysts inevitably form impressions as information begins to accumulate. This is only human nature, and one difference between effective analysts and others is the ability to hold these tentative impressions loosely and to revise them as more information becomes available.

### *Step #7: Consider What the Emerging Inspection Information Might Mean.*

Humans are not unthinking; we are not oblivious to the information we gather and to its possible implications. In fact, a great deal of evidence suggests that we have a highly developed capacity to integrate information and to perceive meaning in that information, even if our perceptions are sometimes at an unconscious level. An Inspections analysis must capture the meanings perceived by the "soft computers" of Inspections staff and consider those meanings in more rigorous ways.

There are at least two different ways to consider emerging information. One is to capture the reactions of Inspections staff after each round of gathering information. For example, a passage in a document, a pattern of data in a report, or a comment made by a discussant might lead the OEI analyst to think about what might be occurring, an interesting question to ask, or an interesting analysis to conduct. These thoughts are extremely valuable for an Inspection, and they should be captured. Inspections staff might:

- Build into every information-gathering instrument (e.g., document review form, data base analysis plan, discussion guide) a section for capturing the thoughts of the Inspection analyst as he or she gathers the information. Make this section large enough and visible enough that Inspections staff realize that filling in this section is an important part of their information-gathering task.
- Encourage Inspections staff to use this section immediately after each information-gathering activity, to re-read the information recorded and to record their own reflective comments or flashes of insight. These can involve perceived patterns of information, points to check, new categories to create, tentative conclusions, and any other thoughts they wish not to lose. Throughout the information-gathering, the project leader can then check these sections for ideas which need action, either immediately or later.

A second way is to use "analytic memos" as information is gathered. These memos, completely informal and completely uncensored, are simply a vehicle for creatively brainstorming a wide variety of ideas as the Inspection unfolds. Inspections staff might:

- Encourage everyone involved in the Inspection to write informal "analytic memos" throughout the course of the Inspection, on any topic whatsoever, no matter how large or small. These memos should be left

exactly as written and circulated immediately to all others involved in the Inspection. These memos may then trigger other thoughts in other Inspections staff, and all these thoughts can then be considered as the Inspection progresses.

Analytical memos are a very good device when used, but there may be times when time pressures preclude using this technique. Even in these circumstances, however, the project leader can at least telephone—either individually or in a group—each team member from each region after each "wave" of interviews or site visits.

### *Step #8: Organize Work Papers to Facilitate Later Analysis.*

One final task completed between information-gathering activities—a task more important than it appears at first glance—is to ensure that all work papers, including all instruments and all analytic memos, are organized to facilitate later analyses. These work papers are required both by the OEI Standards and by the principles of sound analysis. Inspections staff might:

- Ensure that all Inspection work papers, including all information-gathering instruments and analytic memos, are organized according to the official OEI system.

# Analysis After Gathering Information

Although the analysis process begins long before this point, it is true that the bulk of the "final" analyses are conducted after the information has been gathered. For this guide, we have divided the nine remaining suggested steps into five separate phases, each phase quite different from the others: (a) debriefing staff, (b) preparing the raw information, (c) reducing the raw information into preliminary findings, (d) displaying the preliminary findings, and (e) interpreting and verifying the findings.

## Phase A: Debriefing Staff

### *Step #9: Debrief All Staff Involved in the Inspection.*

A traditional analysis method for Program Inspections is the round-table debriefing of all staff involved in the Inspection. This allows staff to discuss perceived findings, outline tentative conclusions, and sketch some possible recommendations. Other, more structured analyses then determine if these findings, conclusions, and recommendations are fully supported by the information gathered.

There are two keys to an effective debriefing. First, it is important to include all staff involved in the Inspection, especially staff outside the office responsible for the Inspection. This reduces the possibility of "groupthink," the risk that all analysts might begin to share the same biases and oversights. Inspections staff might:

- Conduct a full-scale debriefing session after information-gathering is completed. Involve all staff involved in the Inspection, including those from other regional offices and from headquarters offices, if possible.

The second key to an effective debriefing is to allow a totally free exchange of opinions and information. As with the analytic memos discussed earlier, the debriefing should be completely uncensored and should encourage disagreements and well as agreements. Inspections staff might:

- Ensure that all participants in the debriefing have both the time and the acceptance to give their honest opinions about the Inspection and its findings. Build into the agenda specific times for "Devil's advocating" against the tentative conclusions being reached. Encourage staff to "turn the kaleidoscope" and view their information from as many different points of view as feasible.

## Phase B: Preparing the Raw Information

### *Step #10: Complete the Raw Information Set.*

Before beginning structured analyses of any information, whether of quantitative or qualitative information, the raw information must be in a form which can be analyzed properly. The popular saying "Garbage in, garbage out" reminds us that the quality of the analysis is only as accurate or insightful as the quality of the information analyzed. Preparing for these analyses involves completing, then cleaning, the "raw information set."

Even after the information has been gathered, the raw information set is not yet quite complete and ready for analysis. Inspections staff might still need to (1) handle missing information, (2) conduct a content analysis, and/or (3) compute new variables.

***Handling missing information.*** First, regardless of the type of information being analyzed, there will almost certainly be gaps in the information gathered. Perhaps not all documents addressed an important issue, perhaps some of the existing reports omitted certain items, perhaps it was not possible to make every observation which was planned, perhaps certain respondents refused to answer questions. In each of these cases, needed information is missing, and Inspections staff must decide what to do. There are several possible actions. Inspections staff might:

- Make a special effort to obtain the missing information. Perhaps other documents *do* address the important issue, perhaps different versions of existing reports *do* include all items, perhaps more observations *can* be made, or perhaps respondents *will* answer more questions if asked again.

If information is missing because respondents refused to provide information, Inspections staff might:

- Contact respondents who refused to provide information and ask them to discuss a subset of the most critical questions. Persons will often provide information when asked in this manner, and the Inspection will then have more complete information about the critical questions.

As a last resort, Inspections staff might:

- Simply accept the missing information and analyze accordingly. In this case, though, it is important to differentiate among different types of missing information.

For example, information can be missing because (1) Inspections staff inadvertently forgot to ask the question or record the response; (2) the issue was not applicable to the source; (3) the issue was applicable, but the source could not or would not provide information; or (4) the source tried to provide information, but simply did not know. While all these produce "missing" information, each has very different implications for interpreting the analyses.

***Conducting a content analysis.*** The second reason why the raw information set might not yet be complete is that the needed information might not have been gathered in a form which can be easily analyzed. For example, in-depth discussions and the texts of official documents provide rich information, but they can be very difficult to analyze in the original form. The narrative of discussions and the text of documents are often converted into a more manageable form before being analyzed. In these instances, Inspections staff might:

- Conduct a "content analysis" of discussions, texts, or other narrative information gathered during the Inspection.

Content analysis is a specialized analysis technique. (See "References for Further Reading" at the end of this Guide.) The basic steps are to:

- Read part or all of the raw information (e.g., several different responses to a discussion question, key document passages which address an important issue);
- Establish different categories which differentiate the information gathered in a meaningful way (i.e., a coding scheme for the information);
- Test this coding scheme on a larger sample of the information;
- Revise the coding scheme as necessary; and
- Apply the coding scheme to all information gathered.

These steps can be done by one or more analysts, independently or as part of a group process. One Inspections staff conducts a group content analysis of discussion narratives as a regular part of analysis for almost every Inspection. These staff read aloud every response to discussion items one by one, and then the entire group develops a scheme for coding the responses. Because every response is printed onto a flipchart as it is read aloud, all the responses can then be quickly coded and tabulated.

The key to content analysis is the appropriateness of the coding scheme. Since this scheme is essentially a set of rules which translates narrative information into numbers, the accuracy of the analysis is determined largely by how well these rules are devised and implemented. Because different analysts could create different coding schemes for the same information, it is important that top-level Inspections personnel be closely involved in this step.

***Computing new variables.*** The third reason why the raw information set might not yet be complete is that information gathered might need to be combined with other information before it can be analyzed. For example, Inspections staff might have gathered the total costs of a program, but the analysis might be based on per-unit costs. If so, the total costs will need to be divided by the number of participants before analysis can begin. Or Inspections staff might have gathered information on the number of disability determination errors committed, but not yet divided this by the total number of determinations made to compute an error rate.

The possibility of computing interesting variables is limited only by the creativity of Inspections staff, and these new variables are often of great interest to top-level audiences. In the recent Inspection on Nursing Home Technical Assistance, for example, Inspections staff calculated a series of "ridit" variables—an acronym for "relative to an identified distribution"—which provided the HCFA Administrator with a clever and accurate way to identify exactly what items about nursing homes was interesting to a variety of publics. HCFA subsequently published the items with the highest "ridit" scores in a series of state-by-state manuals, and the HCFA Administrator praised the Inspections analysis to the Secretary.

More common variables which can be computed include ratios, proportions, percentages, averages, rank-order scores, deviation scores, and indexes calculated by adding other separate variables. Each of these can be useful and eye-catching, depending on the circumstances. In light of this, Inspections staff might:

- Stay alert for creative ways to present information gathered during the Inspection in ways of greatest interest to the eventual audiences.

### *Step #11: "Clean" the Raw Information Set.*

After the raw information set is complete, it is still not quite ready to be analyzed. The set is complete, but complete with what? Complete with trustworthy information which will lead to accurate analyses, or complete with suspicious information which might yield erroneous conclusions? One more step before beginning the final analyses is to purge the raw information set of any garbage mentioned earlier.

A good beginning is to:

- Plot each item of information in its rawest possible form, and examine individual items for inappropriate responses.

For quantitative information this generally means to plot, for each item, a frequency distribution, histogram, minimum-maximum ranges, and sometimes even the raw scores. For qualitative information this can mean to collate, also on an item-by-item basis, the full text of the information available. One Inspections staff, for example, first examines information from discussions by listing verbatim the responses to each discussion issue, one issue to a flipchart.

Inspections staff can then examine the individual items for inappropriate responses. For example, a value of "17" in a 1-10 coding scheme or a rambling reply unrelated to a discussion topic, both represent information which is "complete" but unusable. One of these responses is obviously illegitimate (the "17" value), and the other is irrelevant (the rambling reply).

Or, as another example, there may be times when the total number of responses which have been coded is less than the total number of cases in the sample. In both these examples, unless these items are correctly coded before analysis begins, these inappropriate responses will skew the analysis and affect the findings.

- Look for logical inconsistencies by crosschecking two or more separate items of information against each other.

For example, if one item lists a respondent as a state Medicaid agency, but another response indicates that the same agency spent no money the last fiscal year, then something is obviously wrong. Almost certainly the information for one of the items is incorrect and should be corrected. Crosstabulations, contingency tables, and scatterplots are common techniques for crosschecking quantitative information items against each other. More subjective comparisons are often necessary for qualitative information.

# Phase C: Reducing the Raw Information Into Preliminary Findings

## *Step #12: Conduct Univariate Analyses.*

Once the raw information set has been completed and cleaned, the final analyses can be conducted. This section of the guide discusses the types of univariate and multivariate analyses which are possible.

Univariate analyses are just that—analyses of single variables, or single items of information, one at a time. Inspections staff often analyze single questions from a written survey, single topics from a discussion guide, single items of information from an existing data base, or other single items from whatever source has been tapped. Univariate analyses of quantitative information usually produce descriptive findings such as measures of central tendency (mean, median, mode), the minimum, maximum, and range of the responses, their variance and standard deviation, and outliers which deviate greatly from the norm.

Univariate analyses, however, are not limited solely to quantitative information; they can be conducted just as easily on qualitative information. When analyzing qualitative information, though, univariate analyses produce descriptive findings with slightly different labels: the typical response, the diversity of responses, and unusual responses.

Figure 1 shows the different descriptive findings which univariate analyses produce for quantitative and qualitative information, but it also shows a more important fact: that these analyses are *conceptually* the same for quantitative and qualitative information, even though they are *technically* different because of the different types of information. As indicated by the three rows in Figure 1, univariate analyses can (1) indicate the overall level of a response, (2) show the variability of those responses, and (3) identify atypical responses.

- Conduct univariate (one variable) analyses on both quantitative and qualitative information. Determine the overall levels of responses, their variability, and atypical responses.

Figure 1

## Descriptive Findings Produced by Univariate Analyses

| | *Quantitative Information* | *Qualitative Information* |
|---|---|---|
| Indicate Overall Levels | Mean, Median, Mode | Typical |
| Show Variability | Minimum, Maximum, Range Variance, Standard Deviation | Diversity |
| Identify Atypical Responses | Outliers | Unusual |

Each type of finding can be useful. For example, overall levels, whether they be mean quantitative responses or typical qualitative responses, provide an average value which is often used (and sometimes misused) to sum up the response. For example, it could be important to know that the average reimbursement is $300, or that the typical reaction to SSA instructions is confusion.

Similarly, the variability of responses provides an indication of the range or diversity of procedures, reactions, etc. For example, it could be important to know that approval time for certain Department grants ranges from 30 to 715 days, or that reports to Congress range from perfectly clear to practically unreadable.

Finally, atypical responses highlight situations which are so unusual as to merit special attention. For example, it could be important to know that one physician in Oklahoma has been reimbursed for three times the average number of cataract operations, or that a particular type of beneficiary is especially satisfied with a particular service.

## *Step #13: Conduct Multivariate Analyses.*

Multivariate analyses, or analyses involving more than one variable or item of information, form the heart of most Inspections analyses. While univariate analyses are helpful for describing each variable, only multivariate analyses can determine the relationships between and among variables. For example, a univariate analysis can reveal how many physicians have been trained in the U.S. vs. in foreign medical programs, and a second univariate analysis can tell how many physicians have been disciplined for substandard practice. But only a multivariate analysis of both variables simultaneously can reveal whether foreign-trained physicians are disciplined more often than U.S.-trained physicians.

Inspections staff typically:

- Conduct appropriate multivariate (multiple variable) analyses such as comparing observed levels aginst appropriate criteria, searching for associations among variables, and/or computer matching.

We saw earlier that Inspections staff establish one or more "benchmarks," or standards of performance, for the concepts they measure. For example, we saw that an attendance rate of 30 percent is viewed very differently when the 30 percent is compared against the rate of 75 percent which was planned or the rate of 10 percent commonly observed elsewhere. Comparing these rates involves making a multivariate analysis of attendance rate vs. locus of performance (actual, planned, and elsewhere).

Comparisons are the essence of any analysis, since numbers in isolation rarely mean anything. What does it mean, for example, to know that the attendance rate is 30 percent without having a larger perspective? In this situation we gain perspective by comparing observed performance to two possible standards: planned performance and performance elsewhere. But there are many possible standards for comparisons, including these two standards and at least 10 others:

- Planned performance (or goals)
- Performance elsewhere

- Expected performance
- Performance in similar situations or programs
- "Model" or ideal performance
- Previous performance
- Performance in settings with known difficulties
- Performance standards required by others (e.g., legislation, regulations)
- Performance standards believed possible by outside experts
- Minimum possible performance
- Performance predicted by informed insiders
- Performance of different subgroups being Inspected

Depending on the purpose of the Inspection, staff must choose the appropriate standards against which to analyze performance. It is often informative, as we discussed earlier, to use several different benchmarks and to provide an even broader perspective.

In the second type of multivariate analyses—searching for associations among variables—Inspections staff identify what factors might be influencing performance. In the example mentioned earlier, Inspections staff determine if the type of training received by medical students influences their likelihood of practicing poor medicine. As another example, an Inspection could use a cross-sectional survey to determine if HCFA carriers with strong quality control procedures make fewer errors when reviewing reimbursement claims.

While these analyses are powerful, they have their limitations. Since Inspections do not involve true experimental designs, it is not logically possible to determine what *causes* performance. For example, perhaps foreign-trained physicians treat higher-risk patients, or in less well-equipped settings, or are watched more closely by the public, or are disciplined more heavily by state agencies. In other words, many factors influence performance, and most Inspections can only identify those factors which *relate* to performance. However, this is still powerful information, since these factors can then be examined further in other analyses.

Inspections staff search for relationships among variables in two different ways: (1) visually, or (2) statistically. Visual techniques include contingency tables, matrices, percentage differences, and scatterplots, while statistical techniques includes tests such as chi-square, t-tests, analysis of variance, correlation, and regression. Figure 2 shows that different techniques are used when the information is in the form of nominal categories than when it is in the form of levels of performance or response.

For example, if Inspections staff were studying the performance of SSA district offices, they might categorize these offices by geographical regions (nominal categories) and rate each district's performance as low, medium, or high. By visual inspection of the resulting $10 \times 3$ matrix (contingency table), Inspections staff could "eyeball" the data to see what patterns appear.

If the offices were instead categorized along a 1-10 scale of "office morale" and performance measured on a continuous measure, bivariate scatterplots would be a more appropriate way to determine if morale seems to be related to performance. In either case, the appropriate statistical tests could also be conducted if indicated.

Figure 2

## Different Ways to Search for Relationships Among Variables

| | *Nominal Categories* | *Levels* |
|---|---|---|
| Visual Search | Contingency tables, Matrices | Percentage differences Scatterplots |
| Statistical Search | Non-parametric (e.g., Chi-square) | Parametric (e.g., correlation) |

The third type of multivariate analysis conducted by Inspections staff—computer matching—is a special variation of comparing two variables. These two variables are (1) presence or absence on one data file vs. (2) presence or absence on another file. For example, if a Social Security number appears on both a file of Federal employees and on a file of persons delinquent on student loans, then that match has found a "hit." If the number appears on only one or the other (or neither) file, then no "hit" results.

# Phase D: Displaying the Preliminary Findings

## *Step #14: Display the Preliminary Findings.*

Once the Inspections staff have conducted the appropriate univariate and multivariate analyses to reduce the raw information set into some preliminary findings, the next task is to display those preliminary findings in a useful manner. Notice that these displays are *not* for presentation purposes at this point, since these findings are not final and the analyses not complete. Instead, these displays are purely for the purpose of enlightening Inspections staff; these displays are a part of the analysis, not a product of it. As one evaluator has noted, "You know only what you can display."

A "display" of preliminary findings is any organized spatial format that organizes information and allows the viewer to draw conclusions. Under this definition, page after page of numerical tables is a display, although a very inefficient one for conveying information. While these pages of tables do enlighten Inspections staff, other displays convey information more quickly and orderly and are much more useful to the viewer.

Inspections staff use a wide variety of displays, including checklists of important factors, matrices, organizational charts, sociograms of important relationships, scatterplots of the relationships between variables, contingency tables, flow charts of processes or procedures, decision trees, and historical timelines. Longitudinal (trend) displays are especially useful for showing performance over time.

The key to using displays effectively for analysis is to display the preliminary findings as soon as possible and in as many different ways as possible. Inspections staff should not hesitate to create displays at every step and for every finding. Viewing these different displays is an important part of "turning the kaleidoscope" to interpret the preliminary findings (see step #15 below) in different ways.

- Display preliminary findings with checklists, matrices, organizational charts, sociograms, scatterplots, contingency tables, flow charts, decision trees, historical timelines, etc.

# Phase E: Interpreting and Verifying the Findings

## *Step #15: Interpret the Findings From the Analyses.*

Once the raw information has been reduced by the proper analyses and these results displayed in a useful manner, the final task of analysis is to interpret and verify the preliminary findings. This is when Inspections staff must decide what the findings mean and what are their implications for the Department.

Interpreting findings can be the trickiest part of any analysis activity. Is the glass half-empty or half-full? What findings represent a pattern, a strength, a weakness, a best practice, a barrier, a vulnerability, an inefficiency, an emerging problem? These judgments are necessarily subjective, even though they are always grounded in careful analyses of qualitative as well as quantitative information, and the "artistic" side of Inspections is especially evident during this process. This is also when the elusive quality of insight is so valuable.

Insight is the ability to "turn the kaleidoscope" or to "stir the stew" in a different way and to see the findings from a new perspective. Insight is also the ability to find new ways to look at the findings, to re-order their importance, to cast a new light on them, or to put a new template over them. A creative insight into the meaning of findings is often the difference between a routine Inspections report and a valuable contribution to the Department.

While insightfulness is to some degree an innate ability, there are ways to stimulate it. For example, Inspections staff might:

- Acknowledge that creative insights into the preliminary findings are essential to an effective analysis, and encourage all Inspections staff to think about the meaning of the findings.
- Build in specific exercises throughout the analysis process which generate and consider new interpretations of the emerging findings. Make these exercises an explicit part of the agenda for all involved staff as the Inspection progresses. For example, bring in the RIG and DRIG at crucial points to react to current interpretations.

One way to gain insight is to develop metaphors. For example, evaluators studying a senior citizens' lunch program were unable to grasp the full importance of the personal interactions among the participants until they re-defined the program as a social club, not just as a nutrition center. Once this metaphor was created, the evaluators could better interpret their findings about the connection between the nutritional and social aspects. Accordingly, Inspections staff might:

- Make explicit efforts to develop metaphors for whatever issues Inspections staff are studying, and use these metaphors to help interpret findings.

Once interpretations have been developed, it is also important to estimate their significance. At what point does a vulnerability merit immediate action? Even more basically, what findings are important enough to emphasize, or even to include, in an Inspections report or briefing? To make these judgments, Inspections staff might:

- Split the Inspections staff into two "adversarial" teams, one arguing that each finding is not significant, the other arguing that each is. Allow each side to present its case as strongly as possible, then vote afterwards on the importance of each finding.

### *Step #16: Demonstrate that the Findings Are Robust.*

In the evaluation field, the term "robust" is applied to findings which are both accurate and applicable across a number of settings. There are several ways to demonstrate that the findings are robust—or credible and pervasive—and thereby deserve confidence. The first is to demonstrate as rigorously as possible that the findings are, in fact, accurate. This can be done in several ways.

One way is to use different methods to gather information for the Inspection, then "triangulate" to see if each method yields the same findings. For example, if quantitative findings extracted from existing data bases mesh perfectly with qualitative findings gained from discussions with knowledgeable experts, audiences have more confidence than if findings come from only one method. Accordingly, Inspections staff might:

- Look for every opportunity to gather information using different methods, especially on the important issues for which credibility is essential.

Another way to maximize credibility is to demonstrate that the findings are true across multiple settings. For example, many Inspections involve gathering information in different regions. If every region revealed the same pattern of findings, then the overall findings gain credibility. On the other hand, if regional differences for the findings reflect real demographic or program differences in variables related to the finding, then credibility is also increased. Thus, Inspections staff might:

- Analyze, perhaps as part of the debriefing process (see step #9 above) or later, whether there are regional differences in findings. If so, these should be understood and explained clearly.

Also, credibility is increased if the raw information set allows an opportunity to replicate the findings. For example, Inspections staff might:

- Randomly split the raw information set in half and first analyze only one half. Then analyze the other half separately to see if the same findings appear. If they do, the findings are much more trustworthy than if all information had been analyzed at once.

Another way to demonstrate that Inspection findings are robust is to establish their limitations—that is, to bound the findings by indicating their shortcoming and how far they do and do not extend. An initial step is to be aware of the limitations of the information which has been gathered. Inspections staff might:

- Specify clearly any concerns they might have about any of the items of information being gathered. This could include not only items of existing information (e.g., data bases, documents, records), but also new information being gathered through observations, discussions, etc. These concerns should be recorded, from the beginning of the Inspection, on the appropriate sections of the information-gathering instruments.

Furthermore, it is important to acknowledge any inconsistencies in the findings. Often all the Inspection findings point toward the same conclusions, but sometimes the findings present a more mixed message. In these cases, Inspections staff might:

- Present the findings in their honest form, even if that form is not entirely consistent, rather than attempting to portray more unanimity than actually exists.

Finally, analyses are sometimes unclear, and more information is needed to clarify the findings. Inspections staff have the choice of gathering the additional information needed or providing less-than-complete information to the Department. In those instances, Inspections staff might:

- Be willing to gather additional information needed to clarify inconsistencies or uncertainties in the findings. This information-gathering might be part of the same Inspection or a follow-up, depending on circumstances.

A final way to establish that Inspection findings are robust is to explicitly consider alternative explanations or disconfirming evidence. By interpreting findings in certain ways, Inspections staff make judgments about reality. But these judgments are likely to be less than perfect, so some information probably exists which would modify or even question these judgments. Inspections staff show analytical balance when they actively seek and consider this information. Inspections staff might:

- Actively seek out information which limits, modifies, or even opposes the findings and interpretations offered. Systematically explore these alternative explanations in an effort to discredit each. Report these efforts in the Inspection reports and briefings.

### *Step #17: Share Preliminary Findings with Others.*

As soon as Inspections staff are convinced that their findings are robust, it can be very helpful to share those preliminary findings with others not involved in designing and completing the Inspection. We have seen that analysis is best done collaboratively, and this applies to offices as well as to individuals. Outside perspectives can help fine-tune an excellent Inspection into an outstanding one.

A "story conference," for example, is an analysis tool developed by OEI which is especially useful. These conferences, held after the preliminary findings have emerged but explicitly *prior* to a draft report, allow regional Inspections staff to present the framework of their findings and to brainstorm with their colleagues from headquarters. These conferences can be held at headquarters, in the regional office, or in unusual circumstances, over the telephone. Inspections staff might:

- Ensure that at least one story conference is held as each Inspection begins to produce preliminary findings. Preserve the informal give-and-take nature of these conferences in order to allow participants to discuss the emerging findings freely and creatively.

Another useful technique is to ask knowledgeable persons outside OEI, perhaps even outside the Department, to discuss the preliminary findings. While these meetings obviously have to be handled carefully, Inspections staff might:

- Meet with selected "outsiders" to gather their perspectives on the preliminary findings and their implications. Use these reactions to conduct further analyses or refine the interpretations.

Finally, OEI analysts know that they never truly understand their findings until they begin to write. They recognize that writing a draft report is not a step which occurs after analysis, but that it is an essential part of analysis itself, since the writing reveals all the gaps and inconsistencies in the findings. Accordingly, Inspections staff might:

- Attempt a draft report of the Inspection findings as soon as possible, even though this draft is never shown to others. Flag throughout the draft all areas which need further analysis or consideration, then pursue each of those areas.

# References for Further Reading

"Case Study Evaluations" (chapter 4); Program Evaluation and Methodology Division; U.S. General Accounting Office; Washington,DC; 1987.

*Case Study Research: Design and Methods* (chapter 5); Robert K. Yin; Sage; Beverly Hills, CA; 1984.

"Content Analysis: A Methodology for Structuring and Analyzing Written Materials"; Program Evaluation and Methodology Division; U.S. General Accounting Office; Washington, DC; 1982.

"Developing and Using Questionnaires" (chapter 16); Program Evaluation and Methodology Division; U.S. General Accounting Office; Washington, DC; 1986.

*Effective Evaluation* (chapter 7); Egon G. Guba and Yvonna S. Lincoln; Jossey-Bass; San Francisco, CA; 1981.

*Evaluation: A Systematic Approach* (chapter 4); Peter H. Rossi and Howard E. Freeman; Sage; Beverly Hills, CA; 1985.

*Getting the Facts* (chapter 6); Jerome T. Murphy; Goodyear; Santa Monica, CA; 1980.

*How to Measure Program Implementation* (chapter 3); Lynn Lyons Morris and Carol Taylor Fitz-Gibbon; Sage; Beverly Hills, CA; 1982.

*Methods for Policy Research* (chapter 4); Ann Majchrzak; Sage; Beverly Hills, CA; 1981.

*Practical Evaluation* (chapter 10); Michael Quinn Patton; Sage; Beverly Hills, CA; 1982.

*Program Evaluation for State and Local Governments* (chapter 6); Harry P. Hatry, et al.; The Urban Institute; Washington, DC; 1976.

*Qualitative Data Analysis;* Matthew B. Miles and A. Michael Huberman; Sage; Beverly Hills, CA; 1984.

*Secondary Analysis;* Robert F. Boruch; Jossey-Bass; San Francisco, CA; 1978.

"Standards, Procedures, and Methodology Manual"; Office of Analysis and Inspections/OIG; U.S. Department of Health and Human Services; Washington, DC; 1986.

*Survey Research Methods* (chapter 8); Floyd J. Fowler, Jr.; Sage; Beverly Hills, CA; 1984.

"Using Structured Interviewing Techniques" (chapter 9); Program Evaluation and Methodology Division; U.S. General Accounting Office; Washington, DC; 1985.

*Utilization-Focused Evaluation* (chapter 10); Michael Quinn Patton; Sage; Beverly Hills, CA; 1986.

# Appendix: Specific Techniques for Analyzing the Information Gathered

### *Step #1: Establish How the Relevant Concepts Will Be Measured.*

- Include the most direct method possible when taking measurements. This implies running tests or simulations of system performance and interviewing beneficiaries about their satisfaction levels, as opposed to relying exclusively on existing documents or perceptions of others.
- Use multiple methods of measuring the relevant concepts. Usually it is quite feasible both to run tests *and* to examine written documents. The different information provided by each method is almost always well worth the additional effort.
- Consider developing "proxy indicators" for hard-to-measure concepts such as satisfaction. These proxy indicators, such as frequency of return and written complaints, are less straightforward than direct interviews, but they can sometimes be more revealing.

### *Step #2: Set Criteria or Standards for "Acceptable Levels" of Each Concept.*

- Establish benchmarks for "acceptable performance" prior to gathering any information. Sometimes these benchmarks are established by statute or by regulation; acceptable error rates for various State-level activities are an obvious example. At other times HHS programs have established and published their own goals for success, and these can easily be obtained from the program.
- Meet with program officials and others involved in the Inspection and jointly agree upon success criteria to be applied. (Incidentally, if this is a new exercise for program officials, they often find it helpful in ways beyond interpreting the Inspection.)
- Develop, in as close a collaboration with program officials and staff as possible, those benchmarks which appear to be most reasonable. Share these planned benchmarks with program officials and ask for their reactions. At a minimum, this process documents that Inspections staff have made a good-faith effort to set performance criteria in a cooperative manner, and reactions from the program might also improve the criteria.
- Establish multiple criteria for successful performances. Include among these criteria any mandated levels, actual plans of the program, past performance levels, ideal performance levels, and any other benchmarks which help to place the performance into its proper perspective.
- Include all benchmarks for all aspects of performance in the initial design of the Inspection. Indicate clearly what it will mean if performance falls above or below each of these criteria. Indicate especially at what levels performance will be judged to be "highly effective," "adequate," or "ineffective."

### *Step #3: Develop an Initial Analysis Plan.*

- Review the original purpose and objectives of the Inspection and tie all analyses to those original aims. Show how each item of information gathered will be used to produce information directly related to the purpose or objectives. If any items cannot be used in this way, consider eliminating them from the Inspection.
- Specify a detailed line of inquiry which will be followed as the information is analyzed. This line of inquiry might follow the layered, archeological model suggested in the fourth guiding principle. If so, it would indicate what simple analyses will be conducted first, what areas are then likely to be analyzed in greater depth, etc.
- Detail, on an item-by-item basis, exactly what analyses will be done and why. By listing these analyses, and by indicating what items of information are needed for each analysis, Inspections staff can see if all items are in fact being gathered. If not, the necessary additions can be made to the draft instruments.

### *Step #4: Conduct a "Trial Run" of the Analysis Plan.*

- Prepare in advance the exact format (i.e., empty shell) of any tables, charts, figures, or graphs which the analysis will produce. Naturally these formats will be empty until information is gathered and analyzed, but they show the *types* of findings which will be produced. Ask the intended audiences to verify that these formats, once filled in, will in fact provide the information needed from the Inspection.
- Generate random numbers to simulate numerical responses to written surveys or existing data bases, generate reasonable answers to simulate responses to open-ended discussions, etc. Then treat this imaginary information exactly as you plan to treat real information gathered during the Inspection: code it, enter it into computers for analyses, analyze it, and present the findings the same ways as planned.

### *Step #5: Develop Instruments to Gather the Information Needed for the Analysis.*

- Consider very carefully exactly what types of analyses are needed when developing information-gathering instruments. Ensure that both the content and the format of the information gathered is compatible with the analyses planned for later.

### *Step #6: Analyze the Accuracy and Importance of Information Being Gathered.*

- Develop, before information-gathering begins, explicit criteria for assessing the apparent accuracy and informativeness of sources. Train all staff on these criteria and use practice sessions to ensure a full understanding.

- Rate the apparent accuracy and informativeness of sources, either by categories (e.g., apparently highly accurate or informed, average, or apparently not accurate or informed) or by numerical ratings (e.g., a 0-10 scale for apparent accuracy or informativeness).
- Use these ratings to determine if different patterns of findings are observed from sources which are more or less accurate or informed.
- Generally err in the direction of including information if its relevance is uncertain. As principle #4 noted, analysis is an evolving, dynamic process, and unexpected information can change the direction of this analysis in important ways. But this unexpected information will only be gathered if Inspections staff are receptive to spotting, recording, and thinking about it.

### *Step #7: Consider What the Emerging Inspection Information Might Mean.*

- Build into every information-gathering instrument (e.g., document review form, data base analysis plan, discussion guide) a section for capturing the thoughts of the Inspection analyst as he or she gathers the information. Make this section large enough and visible enough that Inspections staff realize that filling in this section is an important part of their information-gathering task.
- Encourage Inspections staff to use this section, immediately after each information-gathering activity, to re-read the information recorded and to record their own reflective comments or flashes of insight. These can involve perceived patterns of information, points to check, new categories to create, tentative conclusions, and any other thoughts they wish not to lose. Throughout the information-gathering, the project leader can then check these sections for ideas which need action, either immediately or later.
- Encourage everyone involved in the Inspection to write informal "analytic memos" throughout the course of the Inspection, on any topic whatsoever, no matter how large or small. These memos should be left exactly as written and circulated immediately to all others involved in the Inspection. These memos may then trigger other thoughts in other Inspections staff, and all these thoughts can then be considered as the Inspection progresses.

### *Step #8: Organize Work Papers to Facilitate Later Analysis.*

- Ensure that all Inspection work papers, including all information-gathering instruments and analytic memos, are organized according to the official OEI system.

### *Step #9: Debrief All Staff Involved in the Inspection.*

- Conduct a full-scale debriefing session after information gathering is completed. Involve all staff involved in the Inspection, including those from other regional offices and from headquarters offices, if possible.

- Ensure that all participants in the debriefing have both the time and the acceptance to give their honest opinions about the Inspection and its findings. Build into the agenda specific times for "Devil's advocating" against the tentative conclusions being reached. Encourage staff to "turn the kaleidoscope" and view their information from as many different points of view as feasible.

### *Step #10: Complete the Raw Information Set.*

- Make a special effort to obtain any missing information. Perhaps other documents *do* address the important issue, perhaps different versions of existing reports *do* include all items, perhaps more observations *can* be made, or perhaps respondents *will* answer if asked again.
- Contact respondents who refused to provide information and ask them to discuss a subset of the most critical questions. Persons will often provide information when asked in this manner, and the Inspection will then have more complete information about the critical questions.
- Simply accept the missing information and analyze accordingly. In this case, though, it is important to differentiate among different types of missing information.
- Conduct a "content analysis" of discussions, texts, or other narrative information gathered during the Inspection.
- Stay alert for creative ways to present information gathered during the Inspection in ways of greatest interest to the eventual audiences.

### *Step #11: "Clean" the Raw Information Set.*

- Plot each item of information in its rawest possible form, and examine individual items for inappropriate responses.
- Look for logical inconsistencies by crosschecking two or more separate items of information against each other.

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- Look for every opportunity to gather information using different methods, especially on the important issues for which credibility is essential.

Another way to maximize credibility is to demonstrate that the findings are true across multiple settings. For example, many Inspections involve gathering information in different regions. If every region revealed the same pattern of findings, then the overall findings gain credibility. On the other hand, if regional differences for the findings reflect real demographic or program differences in variables related to the finding, then credibility is also increased. Thus, Inspections staff might:

- Analyze, perhaps as part of the debriefing process (see step #9 above) or later, whether there are regional differences in findings. If so, these should be understood and explained clearly.

Also, credibility is increased if the raw information set allows an opportunity to replicate the findings. For example, Inspections staff might:

- Randomly split the raw information set in half and first analyze only one half. Then analyze the other half separately to see if the same findings appear. If they do, the findings are much more trustworthy than if all information had been analyzed at once.

### *Step #17: Share Preliminary Findings with Others.*

- Ensure that at least one story conference is held as each Inspection begins to produce preliminary findings. Preserve the informal give-and-take nature of these conferences in order to allow participants to discuss the emerging findings freely and creatively.
- Meet with selected "outsiders" to gather their perspectives on the preliminary findings and their implications. Use these reactions to conduct further analyses or refine the interpretations.
- Attempt a draft report of the Inspection findings as soon as possible, even though this draft is never shown to others. Flag throughout the draft all areas which need further analysis or consideration, then pursue each of those areas.