

Solutions Manual

About “Instructor Answers”

These files contain answers to the questions in the workbook *Exercising Essential Statistics*.

The questions and answers are from the sections *Critical Thinking* (Chapters 1–17), *Application Exercises* (Chapters 1–5), and *Data-Based Exercises* (Chapters 6–18). When specific page numbers are given, they refer to the text, *Essential Statistics for Public Managers and Policy Analysts*, 4th edition.

In some cases, questions allow for multiple answers, such as those that require students to apply the material to their area of interest. Some data-based exercises ask students to provide a write-up. Instructors will agree that this is an essential skill, yet each professor is apt to have his or her preferred format or style that is required of students. Hence, the answers given here focus on quantitative results. Also included are additional thoughts about the questions and how they can be used to reinforce the teaching material.

The Instructors’ website also contains *PowerPoint Lecture Slides*, *Sample Syllabi*, *Test Questions*, and *Homework Assignments* that will assist you in teaching this course. At this point, our text is widely adopted and you can find sample syllabi online, too.

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Chapter 1: Why Statistics for Public Managers and Policy Analysts?

Critical Thinking

Note to students: These questions further understanding of selected, key points made in the textbook. Questions in the next section, “Application Exercises,” are designed to encourage application in practice.

1. What is the difference between describing the extent of a social problem and describing the factors that give rise to it? Give an example. How can the latter be useful for developing programs and policies?

Ans: See p. 5, line 10: “By describing the extent of these problems and their underlying causes accurately, managers are able to better formulate effective strategies for dealing with them.” Describing the extent of a problem provides *targets for improvement*. Describing factors that give rise to it provides possible *targets for intervention*. For example, if a key factor causing damage to the environment is automobile exhaust, then

automobile exhaust becomes a target for possible policy interventions; for example, we might seek to reduce emissions or even the use of cars.

2. What is the role of statistics in connection with the six competencies mentioned in the text? What else might be needed to attain these competencies?

Ans: The six competencies are listed on pp. 7–8. This edition ties quantitative skills to Network of Schools of Public Policy, Affairs, and Administration ; International Commission on Accreditation of Public Administration Education and Training Programs; and European Association for Public Administration Accreditation (p. 7). The role of statistics relates mostly to the third competency, data analysis, and somewhat to the fourth, communication of results. It is clear from the listing of other competencies that more skills are necessary for sound analysis than just those dealing with statistics.

3. Many programs produce routine, administrative data that are used to monitor progress and prevent fraud. How useful are such data for the five common uses of analysis and data mentioned in the text? What other data might be needed, such as might be obtained from citizen or client surveys?

Ans: The five common uses of analysis and data are mentioned on pp. 5–6. Administrative data are useful for uses 2, 3, 4, and to some extent, 5. Survey data are typically necessary for uses 1 and 5.

4. Identify a person or situation associated with each of the four stages of proficiency in quantitative analysis.

Ans: The four stages of proficiency in quantitative analysis are mentioned on pp. 9–10. By asking students to identify a person or situation, students can move from the realm of abstract comprehension and ideas, to a concrete understanding that brings these distinctions to life in greater color and complexity. For example, how well do these persons deal with data and analysis? What can they do well and what not? Students can be asked for specific examples in class.

5. Explain how the following concerns of ethics can affect research and its utilization: (1) dual purposes, (2) full disclosure, (3) truthfulness, (4) alternative explanations, (5) communication, and (6) well-being of human subjects. Give examples of each.

Ans: See pp. 10–13. Again, this question forces application. For example, dual purposes in government policy shops force choices among in research topics. Truthfulness may cause research in, or funded by, government policy shops, not to ask certain questions to avoid having to deal with uncomfortable information later. Some of these items might be discussed in class. *Note to instructors:* you may wish to emphasize scientific misconduct on p. 11 and 13. You may or may want to elaborate on that with recent examples, and so on.

Application Exercises

Ans: *Note to students*: Starting in Chapter 6 this section is called “Data-Based Exercises,” which provide hands-on exercises for students that involve real data sets.

1. Identify five problems or challenges in your area of interest that would benefit from analysis or research.

Ans: *Note to instructors*: This is a great question to help students see the potential benefit of this class for them. As an aside, I use the following online assignment in my first week of class:

Please post a statement about your (i) career interests, (ii) recent or past positions relating to your career (if any), (iii) the next job you would like to have (based on your qualifications and master of public administration degree), and (iv) possible future jobs thereafter in your career. Then, identify (v) how data/quantitative methods played a part in your current or past job, (vi) how data could have played a larger part if you had had more quantitative skills, and (vii) how data/quantitative methods are relevant to your next job, including how having such skills can aid you in getting that job (e.g., assist in job interview).

The posting should be substantive and show significant, relevant elaboration.

Grading is curved. Post in the discussion board (under “communication”), called “Week 3: My Career & Quantitative Data.”

2. Identify at least two examples, in your area of interest, of each of the five common uses of analysis and data.

Ans: Answers vary, but you could be sure that they include applications of policy analysis, program evaluation, client/citizen feedback, or surveys. While the evaluation of program outcomes is obvious, you may prompt to think about using data for monitoring fraud, using client/citizen feedback or surveys to identify program needs, and using program data to track improvements in program operations.

3. What data exist in your area of interest? Are there any data sets with which managers and analysts are expected to be familiar?

Ans: See p. 7: “Managers and analysts will have to be *familiar with data sources* in their lines of business.” I think it is a relevant course assignment for students to become familiar with the secondary data in their area of interest, but it may be a matter of priority in light of other assignments whether you ask them to. I give them such an assignment to identify and describe useful sources of data in their field; other instructors build on this to later ask them to analyze such data, too as part of a final course essay or such.

4. At what stage of proficiency do you see yourself? What is necessary to get beyond this stage? Develop some learning objectives for yourself.

Ans: Answers vary. Many students are at the “know nothing” or “journeyman” stages. At both of these stages, they need more foundation in statistical analysis. Students could read Chapter 2 which highlights matters of program evaluation in more detail and which may force some reflection on what skills are needed. You can ask the class as whole, too, what leaning outcomes they would like to see.

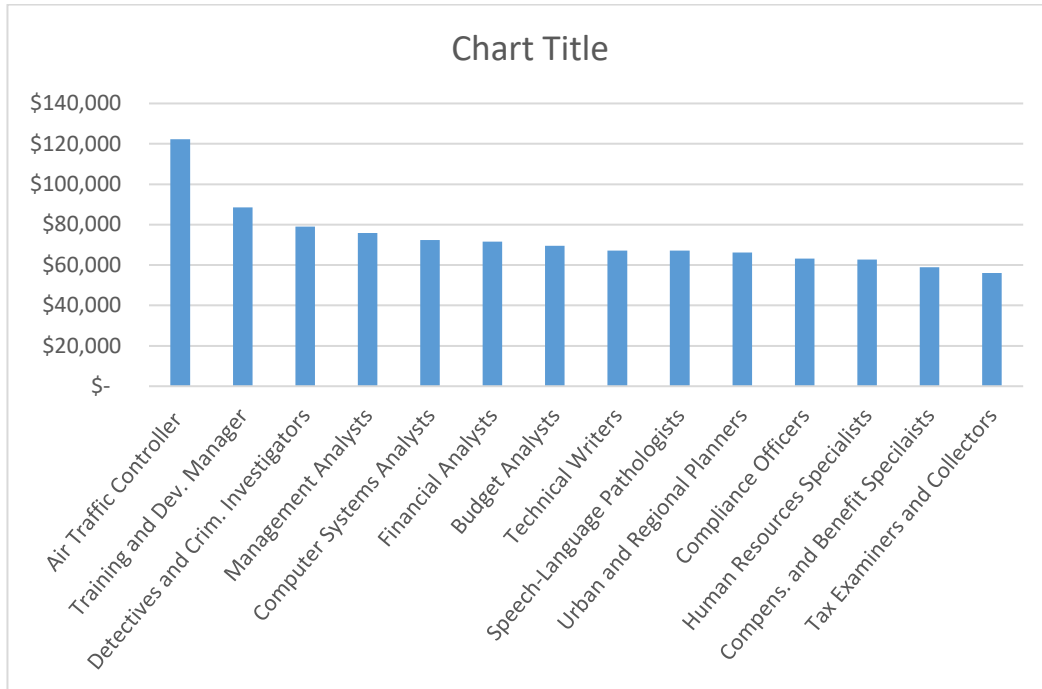
5. Explain how a customer or citizen survey might be useful in your area of interest. What topics might such a survey address? What challenges do you foresee?

Ans: This question will help students see value in doing citizen and client surveys. Many students know that such surveys are valuable, but they fear that the science may be a bit much. Indeed, many workplaces still need people who can run a decent survey and program evaluation! Surveys are discussed in Chapter 5, you could also point to some examples on the data CD. The surveys are described in Chapter 20 of the workbook; you can find many examples of surveys online.

6. Consider the following proposition: “Almost every department needs people with analytical skills.” Verify this proposition by interviewing managers in your area of interest. Also, research salaries at the U.S. Bureau of Labor Statistics, www.bls.gov/oes/current/oesrci.htm, and compare wages for occupations that vary in analytical content, for example, management positions in budgeting, information technology, human resource management, and parks and recreation.

Ans: Students will recognize the truth of this proposition, and you can help them with specific examples. By the way, salary data show that people in technical and analytical positions receive somewhat higher pay than those who are not.

Figure: Mean salaries of selected occupations in government (2013). Source: <http://www.bls.gov>



I also provide them with the following information:

To learn more about salaries in public administration, I suggest you visit <http://www.naspaa.org/students/careers/salary.asp>. You can also take a more thorough look at salaries in public and nonprofit organizations at <http://www.bls.gov/oes/current/oesrci.htm> (for government, scroll down and select sector 92; for nonprofits, select NAICS 712100, museums, or NAICS 813300 and then the subgroup “community and social services”). For an interesting look at careers, visit <http://www.naspaa.org/students/careers/careers.asp> and especially the profiles of alumni. There is also a link to job resources.

7. Identify and consider some ethical situations that would challenge the integrity of your analysis and research, such as being asked to withhold relevant information. How might you deal with such situations?

Ans: This is an excellent question, such as about “speaking truth to power” and being asked by superiors to not provide certain information, even when the public interest is at stake. A starting point for dealing with this specific situation is that research and analysis is about providing information and letting others be responsible for deciding what to do with it. Of course the imagination can wander to very uncomfortable situations, and we need to tell students how to deal with those circumstances.

8. Research the policies and practices that pertain to ethics in research in your agency or in an agency in your area of interest. If there are none, suggest two or three that would serve as a foundation for a more extensive set of policies.

Ans: Student can Google “research ethics” and any agencies or fields they like.

Here is an example:

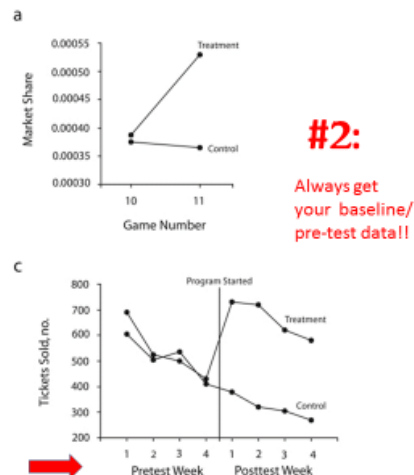
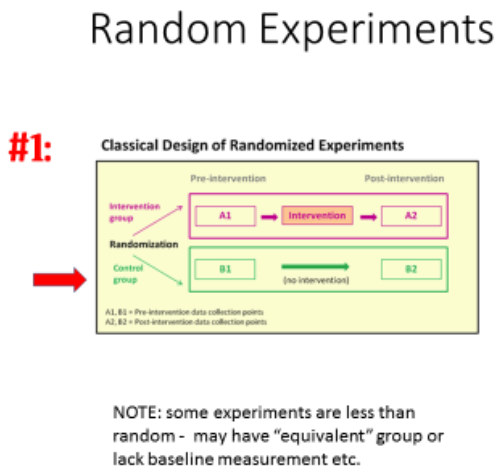
<http://www.apa.org/ethics/index.aspx>
https://www.nasa.gov/offices/ogc/general_law/ethics_resources_page.html

As a practical matter, instructors will need to decide how much time to spend on research ethics at this early point in their course. I like to raise the topic here and bring it up in different ways throughout the semester. I think that doing so provides students with valuable reinforcement and further clarification.

Chapter 2: Research Design

Note: SI refers to the section introduction on pp. 17–20.

Note: This lecture invites professors to also bring their own program or policy evaluation examples, which additional graphs such as:



Critical Thinking

SI = section introduction

1. Give examples of basic and applied research questions that might be raised in the context of (1) a program to reduce adult illiteracy and (2) a program that fights international terrorism. (SI)

Ans: *Adult literacy*

Basic research questions: What is the nature of adult literacy in a specific population? How many people are illiterate? What skills do they have to learn how to read? What barriers