Chapter 3

The Unit of Analysis and Variables

ABSTRACT

In this chapter, students will learn how to identify the unit of analysis of a deductive research question. In addition, the concept of variables is discussed. Three different types of variables are presented. By the end of this chapter, students will be able to identify and define the dependent, independent, and extraneous variables related to a given research question. Numerous examples are presented throughout.

WHAT IS A UNIT OF ANALYSIS?

A unit of analysis (commonly referred to as UoA) is the “who” or “what” of the research. It is the entity that you are studying. This entity can range from individuals, to collections of individuals, to organizations, to geographic locations. An important and initial step in developing a methodology to answer one’s research question is to identify the entity that is being studied. Often, the identification of the UoA occurs within the first few sentences of a research proposal or research paper that has been completed. A logical question at this point is: how does one go about identifying a UoA? The UoA of all research projects is derived from the research question itself.

Consider example 1: Do students that attend research methods class more frequently perform better than students that attend class less frequently? The first step is to identify the relationship within the research question. In example 1 above, the relationship imbedded within the question is attendance and performance – that is, attendance serves as the “x” and it presumably impacts performance, which serves as the “y.” Now that we have identified the relationship, the second step to identifying the UoA is to ask and answer the following question: “To whom or to what does this relationship apply?” The answer to this question invariably is the unit of analysis that is imbedded within the research question. In example 1, the relationship attendance and performance applies to students – research methods applies to students more specifically. Therefore, the UoA is research methods students. See Figure 1.

Let us consider other examples. Does per pupil spending lead to better school performance? Here we have a soundly constructed deductive research
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Figure 1. Identifying the unit of analysis

question given a clearly defined relationship between an “x” that presumably impacts a “y.” In this example, per pupil spending presumably impacts school performance. This identified relationship applies to whom or to what? The answer is schools, and thus “schools” is the UoA for this research question. See Figure 2.

Consider this example – Does exposure to violent video games increase the likelihood of aggressive behavior among teenagers? In this example, the relationship is violent video game exposure and its impact on aggressiveness. The “who” or “what” this relationship applies to is individuals, teenagers more specifically. See Figure 3.

Consider this research question – Do communities with fewer numbers of single-parent households have lower crime rates? We have a research question whereby there is a relationship between the number single parent households and crime. This relationship applies to “places” – more specifically communities. Here is another example that uses “places” as its UoA. Consider this question – Does the death penalty impact homicide rates? The relationship is the death penalty’s presumed impact on homicide rates. The UoA, while not directly stated within the body of the research question, is clearly “places.” The reason is that both death penalty laws and crime occur within some type of geographic boundary. In this case, these geographic boundaries might be states of the U.S. given that each state has the autonomy to choose whether it has capital punishment. Alternatively, the UoA could be nations of the world, as each nation can decide whether to have capital punishment as well. This would be for the researcher to decide. For a student identifying a UoA based on this example, knowing that the UoA is places of some sort would be sufficient. See Figures 4 and 5.

In our final example, consider this public administrative research question – Do performance measurement systems increase productivity? Like