A unit of analysis is the most basic element of a scientific research project. That is, it is the subject (the who or what) of study about which an analyst may generalize. In the social sciences, countries, international alliances, schools, communities, interest groups, and voters are often the units of analysis in studies of economic development, war, teaching strategies, social capital, policy outcomes, and vote choice.

Units of analysis may be different from the units of observation. For example, political scientists may aggregate survey data at the country level by estimating the mean score on an item measuring political participation, assigning that same score to the country to identify how patterns of participation differ crossnationally. In this case, the unit of observation is the individual survey respondent, but the unit of analysis is the country. Likewise, achievements of students are often aggregated to allow schools to be compared. It is the country and the school about which the analyst generalizes, not the citizens or students (see AGGREGATION for a word of caution).

In these examples, more detailed information is available than the analyst requires for his or her project. Often in the social sciences, however, this is not the case: Researchers frequently examine the behavior of units that are unobserved. For example, following Achen and Shively (1995), an analyst may wish to examine the relationship between a social attribute and voting behavior but has only data aggregated at the district level available. That is, he or she has the proportions of those living in the district who have this attribute and of those supporting the party. If both proportions are large, the analyst is tempted to infer that there is an association between these variables at the level of the individual: Voters with this attribute are likely to vote for the party. This type of cross level inference, in which the unit of analysis does not coincide with the unit of observation, is misleading and should be approached with caution (see ECOLOGICAL FALLACY).

Even when units of analysis match the units of observation, however, the characteristics of social units complicate scientific inference. Boucke (1923) notes two differences that distinguish social units from the units of analysis common in the natural sciences: First, the units of social science research are not measurable in a straightforward way or on a determinate scale. Often, a considerable proportion of variance in social phenomena can be attributed to measurement error (see SYSTEMATIC ERROR). Also, some units
of interest may be observable only in their causal implications (see Blalock, 1961). Second, as evident in the examples presented above, units of analysis in the social sciences can usually be divided into various subunits: Communities may be divided into families or households, geographic neighborhoods, or individual members. Boucke concludes that units of analysis in social science are not “things” but the relationships or networks connecting the families, neighbors, or, at the most basic level, the interests of individuals. Subunits rarely have the potential for such substantive meaning or confounding effects in the natural sciences. Furthermore, the variability of relations between subunits makes scientific inference a difficult task: The composite nature of the units of analysis in social research makes “predictions risky, and the more so, the more fully they concern psychic rather than material relations” (Boucke, 1923, p. 460). Analysts working in the social sciences would do well to accommodate these implications of their choice of unit of analysis in their research designs.

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