

TYPES OF VARIABLES / LEVELS OF MEASUREMENT

1. A survey gathers information about the following variables pertaining to the survey respondents:

V1 the number of people living in each respondent's household;
V2 the occupation of the respondent;
V3 the income of the respondent;
V4 the self-placement of the respondent into one of these five ideological categories: strong liberal, moderate liberal, middle of the road, moderate conservative, strong conservative.

- (a) Which provides the best example of a *nominal* variable?
- (b) Which provides the best example of an *ordinal* variable?
- (c) Which provides the best example of an *interval* variable?
- (d) Which provides the best example of a *quantitative* but *discrete* variable?
- (e) Which provides the best example of a *quantitative* and *continuous* variable.

Note 1. In answering Questions #2 and #3 pertaining to the SETUPS/ANES Codebook (Handout #1B), please refer to variables by **both** *substantive name/label* (e.g., PARTY IDENTIFICATION) and formal name (e.g., V09).

Note 2. The nominal/ordinal/interval distinction applies meaningfully only to *non-dichotomous* variables. In answering Questions #2 and #3, select only such variables (i.e., with *at least three values*, in addition to missing data [NA, always coded "9"]).

2.
 - (a) Pick two or three variables out of the SETUPS/ANES Codebook (Handout #1B) that are most clearly *nominal* in nature.
 - (b) Pick two or three variables out of the SETUPS/ANES Codebook that are most clearly *ordinal* in nature.
 - (c) Pick two or three variables out of the SETUPS/ANES Codebook that are most clearly *interval* (or *ratio*) in nature.
3. All variables in the SETUPS/ANES Codebook are presented as *discrete* variables — that is, each is assigned just a small number of distinct values. But some of these variables might be regarded as "truly" *continuous* in nature. Pick out two or three of these variables and explain why they might be so regarded.

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Note 3. The following problems are taken or adapted from early editions of David S. Moore, *Statistics: Concepts and Controversies*, a text book previously used in this course.

4. Identify the level of measurement (**nominal**, **ordinal**, **interval**, or **ratio**) of each of the following variables:
- (a) The concentration of DDT in a samples of milk, in milligrams per liter.
 - (b) The species of each insect found in a sample plot of crop land.
 - (c) A subjects' responses to the following personality test question: "It is natural for people of one race to want to live away from people of other races."
 - Strongly agree
 - Agree
 - Undecided
 - Disagree
 - Strongly disagree
 - (d) The pressure in pounds per square inch required to crack specimens of copper tubing.
 - (e) The positions of baseball teams in their league (or division) standings (e.g., 1st place, 2nd place, etc.)
 - (f) Baseball teams' winning percentages (games won/games played) and/or their "games hind leader."
 - (g) The numbers on the shirts of a baseball teams's players.
 - (h) The reaction time of a subjects, in milliseconds, after exposure to a stimulus.
 - (i) Students' scores on a POLI 300 examination.
 - (j) People's occupations as classified by the Bureau of Labor Statistics (managerial, professional, technical, sales, and so on).
 - (k) House address numbers along a typical city street.