10. Interval and Ratio Levels

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Interval and **ratio** are the two highest levels of measurement in Stevens' original system. Unlike nominal- and ordinal-level data, which are qualitative in nature, **interval- and ratio-level data are quantitative**. Examples of interval level data include temperature and year. Examples of ratio level data include distance and area (e.g., acreage). The scales are similar in so far as units of measurement are arbitrary (Celsius versus Fahrenheit, Gregorian versus Islamic calendar, English versus metric units). The scales differ in that the zero point is arbitrary on interval scales, but not on ratio scales. For instance, zero degrees Fahrenheit and zero degrees Celsius are different temperatures, and neither indicates the absence of temperature. Zero meters and zero feet mean exactly the same thing, however. An implication of this difference is that a quantity of 20 measured at the ratio scale is twice the value of 10, a relation that does not hold true for quantities measured at the interval level (20 degrees is not twice as warm as 10 degrees).

Because **interval and ratio level data represent positions along continuous number lines, rather than members of discrete categories**, they are also amenable to analysis using inferential statistical techniques. Correlation and regression, for example, are commonly used to evaluate relationships between two or more data variables. Such techniques enable analysts to infer not only the form of a relationship between two quantitative data sets, but also the strength of the relationship.

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