

type of proportion. In epidemiology, however, we often shorten the terms for these measures in a way that makes it sound as though they are completely different. When we call a measure a **ratio**, we usually mean a nonproportional ratio; when we call a measure a **proportion**, we usually mean a proportional ratio that doesn't measure an event over time, and when we use the term **rate**, we frequently refer to a proportional ratio that does measure an event in a population over time.

## Uses of Ratios, Proportions, and Rates

In public health, we use ratios and proportions to characterize populations by age, sex, race, exposures, and other variables. In the example of the EMS cases we characterized the population by sex. In Exercise 2.1 you will be asked to characterize a series of cases by selected variables.

We also use ratios, proportions, and, most important rates to describe three aspects of the human condition: morbidity (disease), mortality (death) and natality (birth). Table 2.4 shows some of the specific ratios, proportions, and rates we use for each of these classes of events.

**TABLE 2.4**  
Frequency measures by type of event described

Condition	Ratios	Proportions	Rates
Morbidity (Disease)	Risk ratio (Relative risk) Rate ratio Odds ratio	Attributable proportion Point prevalence	Incidence rate Attack rate Secondary attack rate Person-time rate Period prevalence
Mortality (Death)	Death-to-case ratio Maternal mortality rate Proportionate mortality ratio Postneonatal mortality rate	Proportionate mortality Case-fatality rate	Crude mortality rate Cause-specific mortality rate Age-specific mortality rate Sex-specific mortality rate Race-specific mortality rate Age-adjusted mortality rate Neonatal mortality rate Infant mortality rate Years of potential life lost rate
Natality (Birth)		Low birth weight ratio	Crude birth rate Crude fertility rate Crude rate of natural increase