Four types of descriptive studies

Ecologic studies-ecological studies are used to understand the relationship between outcome and exposure at a population level, where 'population' represents a group of individuals with a shared characteristic such as geography, ethnicity, socio-economic status of employment.

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Four types of descriptive studies (cont)

Case reports-A case report is a detailed report of the symptoms, signs, diagnosis, treatment, and follow-up of an individual patient.

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Four types of descriptive studies (cont)

Case series-A case series is a type of medical research study that tracks subjects with a known exposure, such as patients who have received a similar treatment, or examines their medical records for exposure and outcome.

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Four types of descriptive studies (cont)

Cross-sectional surveys-Are observational studies that analyze data from a population at a single point in time. They are often used to measure the prevalence of health outcomes, understand determinants of health, and describe features of a population.

Medical Microbiology. 4th edition.

4 Types Of Data

Nominal Data is used to label variables without any order or quantitative value. The color of hair can be considered nominal data, as one color can't be compared with another color.

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4 Types Of Data (cont)

Ordinal data have natural ordering where a number is present in some kind of order by their position on the scale. These data are used for observation like customer satisfaction, happiness, etc., but we can't do any arithmetical tasks on them.

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4 Types Of Data (cont)

Discrete Data the term discrete means distinct or separate. The discrete data contain the values that fall under integers or whole numbers. The total number of students in a class is an example of discrete data. These data can't be broken into decimal or fraction values.

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4 Types Of Data (cont)

Continuous data are in the form of fractional numbers. It can be the version of an android phone, the height of a person, the length of an object, etc. Continuous data represents information that can be divided into smaller levels. The continuous variable can take any value within a range.

4 Types Of Data

Qualitative Data	Quantitative Data

4 Types Of Data (cont)

Nominal data	Discrete data

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4 Types Of Data (cont)

Ordinal data	Continuous data

Ratio, Proportion, and Rate

Ratio-A ratio is the relative magnitude of two quantities or a comparison of any two values. It is calculated by dividing one interval- or ratio-scale variable by the other. The numerator and denominator need not be related. Therefore, one could compare apples with oranges or apples with number of physician visits.

Ratio, Proportion, and Rate (cont)

Proportion-A proportion is the comparison of a part to the whole. It is a type of ratio in which the numerator is included in the denominator. You might use a proportion to describe what fraction of clinic patients tested positive for HIV, or what percentage of the population is younger than 25 years of age. A proportion may be expressed as a decimal, a fraction, or a percentage.

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Ratio, Proportion, and Rate (cont)

Rate-In epidemiology, a rate is a measure of the frequency with which an event occurs in a defined population over a specified period of time. Because rates put disease frequency in the perspective of the size of the population, rates are particularly useful for comparing disease frequency in different locations, at different times, or among different groups of persons with potentially different sized populations; that is, a rate is a measure of risk.

CDC-Ratio, Proportion, and Rate

Tables & Graphs

Tables	Graphs

Tables & Graphs (cont)

Line listing, Frequency distri-bution	Bar chart, pie chart, Histogram, Epidemic curve, Box plot, Two-way (or bivariate) scatter plot, Spot map, Area map, Line graph

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Numerical Methods

Measures of central tendency	Measures of dispersion

Numerical Methods (cont)

Measures of central tendency refer to ways of designating the center of the data.	*Also called the spread or variability, are used to describe how much data values in a frequency distribution vary from each other and from the measures of central tendency.*

Numerical Methods (cont)

Mean, Median, Mode	Range, Inter-quartile range, Variance, Standard deviation, Coefficient of variation, Empirical rule,Chebychev's inequality

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Cheatography

Methods Used in Descriptive Epidemiology Cheat Sheet

by zekaone via cheatography.com/201356/cs/42618/

Crude and Age-adjusted Rates

Crude Rates	Age-Adjusted Rates	Standardized Morbidity

Crude and Age-adjusted Rates (cont)

Two Methods for Calculating Age- adjusted Rates

Direct	Indirect

Rates allow for fairer comparisons between geographies with different population totals. Crude rates also account for the total burden of a health outcome to a community. This statistic is calculated as the number of events (numerator) divided by the population at risk (denominator). The population at risk is “a term applied to all those whom an event could have happened, whether it did or not.” For many health statistics, the denominator is simply the population total.	Age adjusting rates is a way to make fairer comparisons between groups with different age distributions. For example, a county having a higher percentage of elderly people may have a higher rate of death or hospitalization than a county with a younger population, merely because the elderly are more likely to die or be hospitalized. (The same distortion can happen when comparing races, genders, or time periods.) Age adjustment can make the different groups more comparable.	*In situations where age-specific rates are unstable because of small numbers or some are simply missing, age-adjustment is still possible using the indirect method* SMR = 1 The health-related states or events observed were the same as expected from the age-specific rates in the standard population. ☒ SMR > 1 More health-related states or events were observed than expected from the age-specific rates in the standard population. ☒ SMR < 1 Less health-related states or events were observed than expected from the age-specific rates in the standard population.

Two Methods for Calculating Age- adjusted Rates (cont)

Calculate the age-specific mortality rates for each age group in each population. Then choose the standard (reference) population from one of the populations (*Note: If the mortality rates of a specific community are compared to the national population, then the national population is considered as a “standard” population). Multiply the age-specific mortality rates of the other population under study to the number of persons in each age group of the standard population. By this way, you will get the expected deaths for each age group of each population. Add the number of expected deaths from all age groups. Finally to get the age-adjusted mortality rates, divide the total number of expected deaths by the standard population. Now you can conclude by comparing the age-standardized mortality rates of two populations

Choose a reference or standard population. Calculate the observed number of deaths in the population (s) of interest. Apply the age-specific mortality rates from the chosen reference population to the population(s) of interest. Multiply the number of people in each age group of the population(s) of interest by the age-specific mortality rate in the comparable age group of the reference population. Sum the total number of expected deaths for each population of interest. Divide the total number of observed deaths of the population(s) of interest by the expected deaths

Easy Way to Learn Standardization : Direct and Indirect Methods

Calculation Rates

Definition	Calculation

Calculation Rates (cont)

Incidence rate- is the number of new cases of a specified health-related state or event reported during a given time interval	**Incidence Rate**= New cases occurring during a given time period/population at risk during the same time period multiplied by 10z

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Calculation Rates (cont)

Mortalilty Rate- is the total number of deaths reported during a given time

Mortality Rate = Deaths occurring during a given time period/ Population from which deaths occurred Multiplied by 10z

Calculation Rates (cont)

Person-Time Rate- When the denominator of the incidence rate is the sum of the time each person was observed

Person Time rate= New cases occurring during an observatio-nperiod/Time each person observed, totaled for all persons multiply by 10z

Calculation Rates (cont)

Attack Rate- It involves a specific population during a limited time period, such as during a disease outbreak. It is also referred to as a cumulative incidence rate or risk

Attack Rate=New cases occurring during a shirt time period/Pop-ulation at risk at the beginning of the time period multiplied by 100

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Calculation Rates (cont)

Secondary Attack Rate- the rate of new cases occurring among contacts of known cases.

Secondary Attack Rate= New cases among contacts of primary cases during a short time period/(Populations at beginning of time period)- (primary cases) multiplied by 100

Calculation Rates (cont)

Point Prevalence- he frequency of an existing health-related state or event during a time period.

Point Prevalence= Existing cases of a disease or event at a point in time/total study population at a point in time multiplied by 100

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