

Data: The Basics

What is Data? What is Statistics?

Data is factual information such as number of crashes, most popular car on the road, number of children in a car seat, the population in the United States (Census). Data is special information organized for analysis so that it can be used to reason, design program, and/or make decisions.

After the data is collected and organized, statistics is the math that is used to analyze and interpret the data. Depending on your project, the statistics can be very basic and easy to use; but can get very complicated for larger projects.

Why do we need Data? (The uses of data)

1. ***Injury Surveillance to define an injury problem in your community.***
Surveillance is an organized system of collecting, analyzing, reporting and using data to track the occurrence of some event in the community. Surveillance allows us to watch for patterns and clusters, and indicates a need to take some action. The information from injury surveillance is useful in developing community profiles and intervention projects. It can show you patterns of injuries such as motor vehicle crashes, fires/burns etc. Examples - CDC and states use surveillance to monitor and report diseases such as botulism, salmonella, and other diseases. Some tribes have developed surveillance systems to monitor and report injuries in their communities. Some of the information that would be collected when conducting injury surveillance are: type of injury, gender and age of person, where the injury occurred, severity of the injury, and whether alcohol was involved.
2. ***Determine the causes of injuries*** . Are there certain sections of highway where you are seeing more motor vehicle crashes? Are they alcohol related? Are injuries higher in motorists not wearing seatbelts?

3. **Developing your injury prevention program.** It can do this in 2 ways: (1) It shows you where to target your limited resources so you can make the most difference in saving lives and reducing injuries; and (2) It can help you determine the best strategy (or intervention) to reduce injuries-

*For example, suppose you have a pedestrian injury problem at 3 locations in your community. Based on the data, you are able to determine that most (85%) occur at one of the intersections at night. First, data shows a pattern of pedestrian injury. Second, the data narrows the problem to one intersection. This information steers you in the direction of focusing your efforts at this one intersection instead of all 3, and implementing an intervention that is effective at nighttime
streetlights*

4. **Evaluating programs** to determine whether or not they are successful or whether changes are needed. Data for program evaluation is sometimes collected before and after an intervention is being implemented.

For example, you want to implement a child car seat program. One way to show whether your program is successful is by showing improvement in car seat usage. you would conduct observational car seat surveys before your program begins, to establish a baseline usage rate, then again after your program begins, to show whether there are increases in usage due to your program.

5. **Develop educational, marketing, and program materials**

For example, you could survey community members for their input about an educational pamphlet you are designing - do they like/dislike or have ideas for improving the layout, readability, graphics or message of your pamphlet. Use this information to help create and improve your pamphlet.

6. **Data helps you get attention for funding.** You need these types of documentation showing local need when applying for grants or other types of funding. But data is also useful to present to Council or other from whom you are trying to get support or funds.

Types of Data

There are several terms associated with the collection and interpretation of data. In order to help define and interpret data, certain information is labeled. To gain a better understanding of how these types of information are used, one must also understand the definitions of these terms used. The types of data you use will determine how you analyze and present your data

Qualitative Data (Also known as Categorical Data). This data cannot be added. The data can come in **nominal** form (unordered) which is data like colors of hair (brown, black, red), did you like the movie (yes/no), gender (male/female), race (American Indian, Hispanic, Asian). The data can also come in an **ordinal** form (ordered). This data has a sequence (mild, moderate, severe) or how did you rate the movie (bad, fair, good, excellent). **Binary** can be nominal or ordinal and just means that there are just two categories (yes/no, green/blue). **Non-binary** means more than two categories.

Quantitative Data (Also known as Numerical Data). Data in the form of numbers gives us information we need to identify injury problems and see certain patterns. The data can come in **discrete** numbers (numbers of crashes, number of injuries) or **continuous** (height, age, blood pressure).

Sources of Data

There can be many sources of injury data. Primary Data is data collected by the immediate user of the data (yourself). Secondary Data is data collected by somebody else.

Primary

Here are three sources most often used for local injury data collection:

- **Injury Records** - include medical records available from the health center or hospital - typically medical charts, RPMS printouts, and contract health records. They also include ambulance, police, and fire department logs and records. Vital statistics or death certificates are collected by some tribes but usually must be accessed from the State or County.
- **Surveys** - allow you to collect data by making observations using known risk factors. Most often a form is used to collect this data which is then analyzed. Home safety, car seat/seat belt/bike helmet use are examples of observational surveys.

Example- An area where the fire death rate is very high. Knowing this, and that elders are at highest risk of fire death, the PHN's, CHR's, Home Health and environmental health teamed up to develop a home safety survey form. The team found that over 50% of elder homes did not have at least one operable smoke alarm. The team then used data from the surveys to identify elders needing smoke alarms and applied for funding to purchase 800 smoke alarms.

- **Interviews, Questionnaires and Focus Groups** - Ways to collect information about safety practices, attitudes, etc. These may be administered in two different ways: (1) By a surveyor who uses a questionnaire to interview one person at a time, or in a group setting (a focus group typically consists of 8-12 people) OR, (2) they may be self-administered, where people complete the survey and return it on their own. This method typically has a low return rate, but requires less time and expense to do.

Secondary

- **State and Federal Resources** - There are many resources out there collecting injury data if information is needed immediately and time is a factor when reviewing information. Some federal examples are:

Behavioral Risk Factor Surveillance System. The Behavioral Risk Factor Surveillance System (BRFSS) monitors risk behaviors associated with the leading causes of injury and death among Americans 18 and older. (CDC)

Fatality Analysis Reporting System. The Fatality Analysis Reporting System (FARS), managed by the National Highway Traffic Safety Administration, contains data about all fatal traffic crashes on public roadways within the 50 states, the District of Columbia, and Puerto Rico.
<http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/FARS/809-726/pages/page1.htm>

WISQARS™ (Web-based Injury Statistics Query and Reporting System) is an interactive database system that provides customized reports of injury-related data. It is maintained by the CDC.
<http://www.cdc.gov/ncipc/wisqars>

Trends in Indian Health and Regional Trends in Indian health that provide very general health and injury information are published by the Indian Health Service (IHS).
http://www.ihs.gov/NonMedicalPrograms/IHS_Stats/IHS_HQ_Publications.asp

Data Limitations

There are a number of things that can limit your ability to collect good local data.

- **Inconsistent case definition** - Here you can collect certain injury information, then later decide to omit or include other information.
- **Incomplete or difficult to read information** - medical charts or other records can limit your data.
- **Small size community** - may limit your injury data as well. Statistical significance problems may arise from small numbers of injuries that occur in small communities.
- **Self - reported data** - Can be unreliable.
- **Personal Questions** - People may be reluctant to answer so unless questions are relevant to the injury issue, you may want to steer clear of them.