

LEADING CAUSES OF DEATH

1. Definition:

LEADING CAUSES OF DEATH are defined as underlying cause of death categories or major ICD (International Cause of Death) groupings (such as Diseases of the Heart, Malignant Neoplasms, Accidents, etc) that usually account for large numbers of deaths within a specified population group and time period.

2. Calculation:

Frequency counts of deaths by cause of death grouping or category sorted in rank order from high to low.

3. Purpose:

Determining and monitoring the leading causes of death is considered a primary and important indicator of a geographic area's (country, state, county) overall health status or quality of life

4. Ranking the Frequency of Death by Cause of Death:

The accepted approach to determining the leading causes of death is to group deaths into standard categories based upon the underlying cause of death (ICD) code assigned to each death. There are currently seven standard lists of cause of death groupings that are used for ranking under the International Classification of Diseases, Tenth Revision. These seven "short lists" are used for ranking deaths in specific situations, as follows:

List of 358 Selected Causes of Death	To comply with WHO Tabulation Regulations
List of 113 Selected Causes of Death	For data tabulation and analysis of general mortality and ranking leading causes of death
List of 130 Selected Causes of Infant Death	For data tabulation and analysis of infant mortality and ranking leading causes of infant death
List of 39 Selected Causes of Death	For tabulations by smaller geographic areas
List of 124 Selected Causes of Fetal Death	For data tabulation and analysis of fetal mortality
List of Motor Vehicle Accident Deaths	For tabulations comparable with ICD-10 categories
List of Injury, Poisoning and Certain Other Consequences of External Causes	For cross-tabulations of external causes and nature of injury

These lists organize ICD-10 cause of death codes into specific groupings. In addition, the lists identify those groupings that are "rankable" as a leading cause of death. Categories that include signs and symptoms or that are a residual category, as in the category "Other unspecified infectious and parasitic diseases" are not considered rankable. Also, deaths due to a more detailed cause of death would not be considered during ranking when included within a broader ranked cause of death category. An example of this latter exclusion would be hypertensive heart

disease which would not be considered as a possible leading cause of death because it is included within the ranked category Diseases of the Heart.

For details on these classifications see: http://www.cdc.gov/nchs/data/dvs/im9_2002.pdf

5. Background

Death certificates allow for the reporting of the medical conditions that the medical certifier attributes to causing or contributing to death. A death record is designed to allow the certifying physician to record multiple causes of death for a decedent and to arrange them so that the causal or etiological relationship of the medical conditions that finally lead to the death are recorded.

In order to effectively evaluate the reported mortality information, the conditions listed by the medical certifier are coded using standard cause of death classification categories developed by the World Health Organization. The cause of death coding system currently used in the United States is described in the International Classification of Diseases, Tenth Revision ([International Classification of Diseases, Tenth Revision \(ICD-10\)](#)).

Based upon the information provided on the death certificate by the medical certifier, an underlying cause of death is selected, using accepted international rules for determining the underlying cause of death. It is the underlying cause of death that is used to determine the leading causes of death. Organizing underlying cause of death codes into meaningful groupings is a key step in developing uniform and informative mortality information. Ranking mortality data simply by the underlying cause of death code assigned would be very difficult to interpret. The need for standardized cause of death categories when determining leading causes of death stems from the extensive detail to which deaths are classified. With over 8,000 underlying cause of death codes under the current classification system, some agreement on the appropriate grouping of these many detailed cause codes is essential to being able to compare leading cause of death information between regions and over time.

6. Resources:

For a presentation of leading cause of death data see:
http://www.cdc.gov/nchs/data/nvsr/nvsr53/nvsr53_17.pdf

For details on leading cause of death rank groupings see:
http://www.cdc.gov/nchs/data/dvs/im9_2002.pdf
ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Manuals/Mortality/ftext2002.wpd

For background into the need for and usefulness of leading cause information see:
<http://www.nordclass.uu.se/WHOFIC/papers/reykjavik88.pdf>

7. Technical Notes:

- Leading causes of death information is a useful indication of a population's health status that can serve to supplement other mortality measures. The information can be used to target public health programs. It is simple to compute and to comprehend, with an intuitive appeal to a general audience.
- Leading causes of death can be examined by various factors, including age, sex and race/ethnicity to characterize similarities and differences in health across selected subpopulations and demographics.
- Like a crude death rate, leading causes of death do not take into account factors such as population distribution by sex, age or race/ethnicity. This needs to be kept in mind when comparing leading causes of death for different geographic areas or different periods of time. Leading causes of death can be determined even when lacking reliable population estimates, making it a readily available health measure wherever effective mortality reporting is in place.
- While useful as an indicator of health status, leading causes of death should be considered as a supplement to more traditional death statistics. The data cannot be used to determine mortality risk, however. There are a number of measures that can be used to gauge the relative importance of specific causes of death. These include age-adjusted death rates, cause-eliminated life tables and cause-associated years of productive life lost. Measures such as these are generally more useful in monitoring health status over time, across geographic area or between population subgroups.
- It is common practice to present a measure such as [age-adjusted death rates](#) sorted by cause of death categories and highest values.
- Often subcategories of the ranked cause groupings are presented that provide a different, more detailed or more specific perspective of the mortality information. For example, the leading causes of death by cancer site might be presented. The rankable condition category, relative to the leading causes of death, would be all cancers combined. Presenting more detail as to which of the many cancer sites are the leading cancer killers provides a more detailed perspective of the ranked cause group for all cancers.
- The National Center for Health Statistics has developed cause of death groupings for determining underlying cause of death for the last five International Classification of Diseases (ICD) revisions. It is important to obtain and follow the cause of death groupings that match the ICD revision reflected in historic mortality data. The cause of death groupings are constructed to be consistent with those developed by the World Health Organization to ensure comparability of cause-of-death statistics within and between nations. They are also organized to be able to compare leading causes across the ICD revisions used historically.