

VitalPro for Win32 - User Guide

Texas ICD-10 Underlying Cause Deaths

Expert Health Data Programming, Inc.

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Chapter 1: Introduction

Nature of the software - Vitalnet is a health data warehouse / data analysis system. Vitalnet includes both desktop (VitalPro) and internet-based (VitalWeb) systems. VitalPro and VitalWeb make analyzing data faster, easier, and more reliable. This user guide describes VitalPro for Win32, which runs directly on a PC or LAN. For convenience, we will often refer to the software as simply VitalPro.

Advice about user guide - We have made VitalPro as self-explanatory as possible. You don't have to read this user guide. If you pay attention to the menus, you can fully use the software. However, we recommend you read the user guide because: (1) Many users learn better from a written text. (2) It is helpful to have an overview of what the software can do, to know its capabilities, before using it. (3) The user guide explains many background concepts necessary for properly interpreting and using the data.

PDF and HTML versions - Viewing the PDF version of this user guide requires Adobe or other PDF reader. Viewing the HTML version requires any modern browser connected to the internet. The user guide is also designed to be printed.

Tutorial - This user guide incorporates a tutorial, to help you get started using the software. Tutorial sections are highlighted as shown in this example:

Sample Tutorial Step - View the output in your browser.

Organization - Here's how this user guide is organized:

- **Chapter 1: Introduction** - Introduces Texas VitalPro for Win32 (VitalPro).
- **Chapter 2: Understanding Results** - Shows and explains typical VitalPro tables.
- **Chapter 3: Using the Interface** - Describes and shows how to use VitalPro menus.
- **Chapter 4: Outlines of Submenus** - Lists VitalPro menus and capabilities.
- **Chapter 5: Basic Table Layout** - Explains how "table variables" (eg, rows) specify table layout.
- **Chapter 6: Data Variables** - Documents and explains variables such as race and age.
- **Chapter 7: Charts and Maps** - Explains map and chart (bar, line, pie) settings.
- **Chapter 8: Other Parameters** - Explains remaining parameters (eg, cell suppression).
- **Glossary** - Defines terms related to mortality data and VitalPro.

Citation for Vitalnet - Expert Health Data Programming, Inc., Texas VitalPro for Win32: Data Warehouse Software for Analyzing Texas ICD-10 Underlying Cause Deaths. Bellevue, Washington. 1998-2019. Browse www.ehdp.com for more information about the software or to contact EHDP.

Acknowledgements - We gratefully acknowledge the suggestions and ideas we have received from Texas Department of State Health Services staff and other users. Please contact us at 888-709-5319 or at www.ehdp.com if you have suggestions or requests.

References for Vitalnet map color palettes - • LW Pickle, M Mungiole, GK Jones, AA White, "Atlas of United States Mortality", National Center for Health Statistics, 1997. • CA Brewer, "Color Use Guidelines for Mapping and Visualization", in "Visualization in Modern Cartography", Elsevier, 1994. • ColorBrewer web site showing color palettes.

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1-1: Advantages and Benefits

· VitalPro makes it easy to analyze Texas mortality data.

Fast - You get results in seconds or minutes. Depending on the analysis, alternate methods could easily require hours or days to complete.

Reliable - VitalPro helps prevent mistakes. It automatically incorporates needed complex algorithms and relationships. In contrast, analyses with SAS, SPSS, and other generic stats software are error-prone (besides being quite tedious). There are many steps that can go wrong in trying to manually analyze data.

Flexible - A wide variety of tables, charts and maps may be produced. You may set table rows and columns however you want. A large number of table, map, chart, and data parameters may be selected and combined as needed. On the other hand, if you choose you can ignore most program options, as they are set to reasonable default values.

Efficient - VitalPro goes beyond just being fast. For example, you can automatically make a whole series of tables with one keystroke (multi-tables), such as a separate table for each county. As another example, chart output is automatically produced whenever it makes sense, but NOT produced when it would look terrible or be invalid.

Easy to use - All operations are menu-driven, so you don't need to do tedious scripting. And you don't need to know any special codes such as FIPS codes.

Has online help - If needed, context-sensitive help is available from each menu. In addition, you may select from a list of on-line help topics, providing advice on topics related to VitalPro and data analysis. The on-line help complements the information in this user guide. Useful on-line reference materials are also provided, such as tables of standard populations used for age-adjustment.

Fully documented - VitalPro output helps prevent data misinterpretation. All output is fully documented, so (1) there is no confusion or question about the exact analysis that was done, and (2) the analysis can be exactly replicated if needed.

Makes charts and maps - VitalPro automatically makes charts (bar, line, and pie) and maps. The charts and maps can be customized in a wide variety of ways, as explained later.

Integrates with other software - VitalPro automatically displays HTML output in your desktop browser. And the HTML may be imported into word processing software. In addition, the following alternative formats are automatically made along with each analysis, to allow importing the results into other software tools: (1) ASCII text format, (2) delimited format for importing into spreadsheets, (3) dBASE III format for importing into statistical, GIS, mapping, graphing and other software, (4) PNG, PDF, SVG and GIS map formats.

Can be customized - Let us know if other capabilities you would like added. We want to further improve VitalPro to meet your needs.

1-2: Data Within VitalPro

· **VitalPro links and analyzes geographic, population, mortality, and ICD-10 data.**

Geographic information - VitalPro includes a database of Texas counties and regions, linked to the population and mortality data sets. Boundary files are included for making maps.

Population data - The Center for Health Statistics at DSHS provides 1980-1999 Texas population data. The Texas State Data Center at Texas A&M provides Texas population data for 2000 and beyond. The Texas State Data Center periodically revises its estimates for years between censuses, but the changes are typically small. The population variables included within VitalPro are age, county of residence, race, sex, and year. Population figures are used for calculating death rates. A separate Vitalnet interface, PopTrend, analyzes population data for demographic trends, and to obtain denominators for analyzing other data sets.

Mortality data - The Center for Health Statistics at the Texas Department of State Health Services provides all Texas mortality data. New data are normally loaded once a year, based on their schedule. Mortality variables within the software include age of deceased, cause of death, county of residence, race, sex, and year.

Place of residence - The software analyzes by place of residence of the deceased. For example, if a Dallas resident died in a motor vehicle collision in Houston, the software would classify the death under Dallas. Standard mortality reports usually use place of residence (the other system is "place of occurrence").

Underlying cause - The software analyzes by underlying cause (the cause which initiated the sequence of events leading to death). For example, if a death certificate lists rheumatoid arthritis, myocardial infarction (MI), and cardiac arrhythmia secondary to MI, the underlying cause is MI. A separate program (MultiCod) analyzes multiple cause mortality data.

ICD information - The ICD (International Classification of Diseases) is the standard system for classifying causes of injury, illness and death. The software includes a complete database of the ICD system, for selecting and combining causes of death to analyze. For example, you can easily determine the leading causes of death or select any combination of ICD codes for analysis. The ICD-10 system is used starting with 1999 mortality data. Mortality data for 1980 to 1998 use the ICD-9 system. VitalPro operation is the same with ICD-9 or ICD-10 data, so there is no separate user guide for analyzing ICD-9 death data.

Data linking - Four data sets (geographic data, population data, mortality data, and ICD data) are linked with each other into the VitalPro data warehouse.

1-3: Accessing VitalPro

• Access VitalPro on a standalone PC or via LAN.

Local access (PC's and local area networks) - You may use Texas VitalPro on a stand-alone PC or laptop running any version of Windows. Texas VitalPro may also be run from a local area network. Generally, VitalPro runs faster from a standalone installation, since it does not have to send data over the network.

Execution speed - VitalPro is fast. The software has been tested to produce rapid results on any Windows PC, and simply runs faster on faster computers. Analyses that might otherwise take hours to days to set up and run are done in seconds or minutes.

The software execution speed depends on:

- Speed of the computer you are using.
- Speed of the network you are working on.
- Specific analysis you are doing (greatest effect).

It typically takes a second or two to generate output.

1-4: Confidentiality Policy

• Texas VitalPro users must comply with confidentiality requirements.

Confidentiality policy - Your use of Texas VitalPro indicates your agreement to the following conditions: You will not try to use Texas VitalPro results nor let anyone else use Texas VitalPro results to learn the identity of a reported death, or for any purpose other than statistical analysis. If you discover the identity of a reported death, you will advise the Director of the Center for Health Statistics at the Texas Department of State Health Services of the incident, will safeguard or delete the information that would identify the individual, will make no use of the knowledge, and will inform no one else of the discovered identity.

Cell suppression - If you so desire, Texas VitalPro can suppress cells that have fewer than a user-defined number of death. Cell suppression can increase the confidentiality of written reports in some cases. Cell suppression is described more fully later.

Chapter 2: Understanding Results

What's in this chapter - Before jumping in and using VitalPro (next chapter), it is advised to get a good understanding of the results of the software. This chapter explains the organization and content of VitalPro tables.

This chapter explains the four sections of a VitalPro table:

- **Header** - Basic analysis parameters.
- **Data section** - Numerical results.
- **Bar graphs** - Graphical results.
- **Footnotes** - Other analysis parameters.

In addition, this chapter shows examples of actual Texas VitalPro tables, to give you an idea of what is possible. You are given an opportunity to practice interpreting sample tables.

2-1: Typical VitalPro Table

• Each table has four parts: header, data section, tabular chart, footnotes.

```
Deaths
Tabulated by Age and Sex
Years: 1999
Place of Residence: Galveston, Harris
ICD J40-J47: Chronic Lower Respiratory Diseases

Age          Male   Female  Total
-----
Birth-19      7     1      8
20-39         2     4      6
40-59        34    33     67
60-99+       359   399    758
-----
Total         402   437    839

Horizontal Bar Graphs (X = 26.6 Deaths, x = 13.3):

Age          Male          Female
-----
Birth-19      x
20-39
40-59        Xx              X
60-99+       XXXXXXXXXXXXXx XXXXXXXXXXXXXXXX
-----

Analysis Footnotes:
Unique ID, for Keeping Track of Analyses: 428HBCSW
Output Produced: Sat Apr 28 17:02:53 2001, by Texas VitalNet
Deaths Classified by: ICD-10, Underlying Cause, County of Residence
Mortality Data Source: TDH Bureau of Vital Statistics
```

Header: Documents the analysis. The table analyzes 1999 deaths for Galveston and Harris counties. Chronic lower respiratory disease (ICD J40-J47) is analyzed.

Data Section: Contains the results, organized into columns and rows. In this example, there is one column for each sex and one row for each of four age groups. Verify there were 33 deaths in women age 40-59, 402 deaths in males, and a total of 839 deaths. Each result (such as 33, 402, and 839) is called a "cell".

Tabular Chart: Represents the results in a simple graphical format. In this example, each 'X' (big X) symbol represents 26.6 deaths. The tabular charts are optional. The tabular chart clearly shows that the great majority of deaths in this analysis were in the 60-99+ age group, for both sexes.

Footnote: Documents less important aspects of the analysis, such as when the table was produced. Assigns a unique ID to the table for future reference.

2-2: Table #1 to Interpret

Here is a sample table (footnotes omitted) for you to practice on. Try interpreting the table by filling in the spaces below. Then, check your answers with those on the next page.

Death Rate (per 100,000)
 Age: 20-39 Years
 Year: 1999
 Cause of Death: Human immunodeficiency virus [HIV] disease (ICD B20-B24)

Place of Residence	Male Rate, Deaths	Female Rate, Deaths	Total Rate, Deaths
PHR 3	14.8 120	2.3 18	8.6 138
PHR 6	16.8 120	6.3 43	11.6 163
PHR 7	8.7 34	4.3 15	6.6 49
PHR 8	12.2 39	1.9 6	7.1 45
Total	14.0 313	3.8 82	9.0 395

Tabular Chart (X = 1.1 Deaths / 100,000, x = 0.6):

Place of Residence	Male Rate	Female Rate	Total Rate
PHR 3	XXXXXXXXXXXXXx	XX	XXXXXXXXXx
PHR 6	XXXXXXXXXXXXXx	XXXXXx	XXXXXXXXXXXXXx
PHR 7	XXXXXXX	XXXX	XXXXXX
PHR 8	XXXXXXXXXXXXX	Xx	XXXXXXXXXx
Total	XXXXXXXXXXXXXx	XXXx	XXXXXXXXXX

Header	Outcome (main statistic): _____
	Years analyzed: _____
	Geographic areas analyzed: _____
	ICD groups analyzed: _____
	Age groups analyzed: _____
Data Section	Rows variable: _____
	Columns variable: _____
	# of females died in PHR 6: _____
	Male death rate in PHR 7: _____
Tabular Chart	Death rate for one big 'X': _____

2-3: Table #1, Interpreted

Here is the same table, and a suggested interpretation. If you had a problem, try reading through the answers again or ask a local data analyst for help.

Death Rate (per 100,000)			
Age: 20-39 Years			
Year: 1999			
Cause of Death: Human immunodeficiency virus [HIV] disease (ICD B20-B24)			
Place of Residence	Male Rate, Deaths	Female Rate, Deaths	Total Rate, Deaths
PHR 3	14.8 120	2.3 18	8.6 138
PHR 6	16.8 120	6.3 43	11.6 163
PHR 7	8.7 34	4.3 15	6.6 49
PHR 8	12.2 39	1.9 6	7.1 45
Total	14.0 313	3.8 82	9.0 395

Tabular Chart (X = 1.1 Deaths / 100,000, x = 0.6):

Place of Residence	Male Rate	Female Rate	Total Rate
PHR 3	XXXXXXXXXXXXXx	XX	XXXXXXXXXx
PHR 6	XXXXXXXXXXXXXx	XXXXXx	XXXXXXXXXXXXx
PHR 7	XXXXXXX	XXXX	XXXXXX
PHR 8	XXXXXXXXXXXX	Xx	XXXXXXXXx
Total	XXXXXXXXXXXXXx	XXXx	XXXXXXXXXX

Header	Outcome (main statistic): Death rate (per 100,000) Years analyzed: 1999 Geographic areas analyzed: Public Health Regions 3, 6-8 ICD groups analyzed: ICD B20-B24 (HIV/AIDS) Age groups analyzed: 20-39
Data Section	Rows variable: Row for each area set Columns variable: Column for each sex # of females died in PHR 6: 43 Male death rate in PHR 7: 8.7 per 100,000
Tabular Chart	Death rate for one big 'X': 1.1 per 100,000

2-4: Table #2 to Interpret

Here is another table. Fill in the spaces below. Then, check your answers on the next page.

Age-Adjusted Death Rate (per 100,000)
 Age Adjustment Standard Population: 2000 US
 Year: 1999
 Place of Residence: Texas
 ICD C33: Malignant Neoplasm Of Trachea
 ICD C34: Malignant Neoplasm Of Bronchus And Lung

Race	Male AADR, Deaths		Female AADR, Deaths		Total AADR, Deaths	
White	83.5	4,201	46.0	3,055	61.6	7,256
Black	123.8	721	44.7	387	76.2	1,108
Hispanic	43.8	505	14.5	231	26.7	736
Other	48.8	48	20.6	32	32.4	80
Total	79.2	5,475	39.9	3,705	56.3	9,180

Tabular Chart (X = 6.2 Deaths / 100,000, x = 3.1):

Race	Male AADR	Female AADR	Total AADR
White	XXXXXXXXXXXXx	XXXXXXXx	XXXXXXXXXX
Black	XXXXXXXXXXXXXXXXXXXX	XXXXXXX	XXXXXXXXXXXXx
Hispanic	XXXXXXX	XXx	XXXXx
Other	XXXXXXX	XXXx	XXXXX
Total	XXXXXXXXXXXX	XXXXXXXx	XXXXXXXXXX

Header	Outcome (main statistic): _____
	Years analyzed: _____
	Geographic areas analyzed: _____
	ICD groups analyzed: _____
Data Section	Rows used in this example: _____
	Columns used in example: _____
	How many Black males died: _____
	Hispanic female death rate: _____
	Overall death rate: _____
Tabular Chart	Death rate for one big 'X': _____

2-5: Table #2, Interpreted

Here is the second table again, and our interpretation of the results.

Age-Adjusted Death Rate (per 100,000)
 Age Adjustment Standard Population: 2000 US
 Year: 1999
 Place of Residence: Texas
 ICD C33: Malignant Neoplasm Of Trachea
 ICD C34: Malignant Neoplasm Of Bronchus And Lung

Race	Male AADR, Deaths		Female AADR, Deaths		Total AADR, Deaths	
White	83.5	4,201	46.0	3,055	61.6	7,256
Black	123.8	721	44.7	387	76.2	1,108
Hispanic	43.8	505	14.5	231	26.7	736
Other	48.8	48	20.6	32	32.4	80
Total	79.2	5,475	39.9	3,705	56.3	9,180

Tabular Chart (X = 6.2 Deaths / 100,000, x = 3.1):

Race	Male AADR	Female AADR	Total AADR
White	XXXXXXXXXXXXx	XXXXXXXx	XXXXXXXXXX
Black	XXXXXXXXXXXXXXXXXXXX	XXXXXXX	XXXXXXXXXXXXx
Hispanic	XXXXXXX	XXx	XXXXx
Other	XXXXXXXX	XXXx	XXXXX
Total	XXXXXXXXXXXX	XXXXXXXx	XXXXXXXXXX

Header	Outcome (main statistic): Age-adjusted death rate Years analyzed: 1999 Geographic areas analyzed: Texas ICD groups analyzed: ICD C33-C34
Data Section	Rows used in this example: Row for each race Columns used in example: Column for each sex How many Black males died: 721 Hispanic female death rate: 14.5 per 100,000 Overall death rate: 56.3 per 100,000
Tabular Chart	Death rate for one big 'X': 6.2 per 100,000

Chapter 3: Using the Interface

What's in this chapter - Finally, you will get to use VitalPro! This is probably what you have been waiting for! You will learn to navigate the interface, select parameters, and produce a few tables like those you learned about in the previous chapter.

Some advice about learning - As you use VitalPro, we encourage you to explore and try things. Don't be shy. You cannot cause any damage by using the software. VitalPro does a lot, and there are a lot of options, because analyzing data has many options. But running the software is pretty simple, once you know the basic way it works.

Open default browser - Your PC has a "default browser" set up. That's the browser that normally displays HTML files (web pages) for you. Before you start VitalPro, open the default browser. Eventually, when you make output from VitalPro, the output will display in the browser. The preferred browsers are Firefox, Internet Explorer, Safari, and Opera. Chrome has a bug, does not display local files via Javascript, so Chrome fails to display time trend maps.

Access the software - A tutorial runs through this chapter. All procedures you are expected to do as part of the tutorial are highlighted in a different type style, as shown below. At this point, do the following:

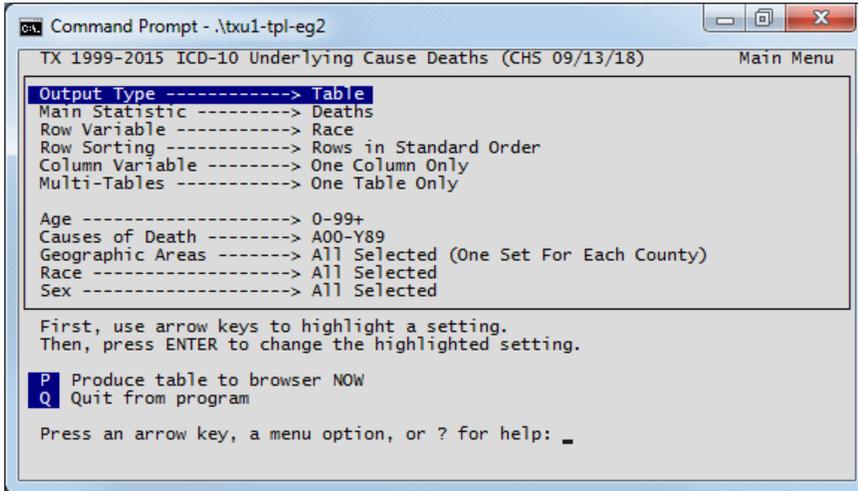
Start Texas VitalPro for Win32 by clicking on the icon.

The icon may look like a doctor's bag, or may be a different desktop icon. If you do not have an icon, ask your network manager to set things up to start VitalPro from an icon. If you can't start VitalPro or have some other issue, get assistance from another Texas VitalPro user. Or, contact us.

VitalPro runs in a "Win32 Console". This is a special interface available on all Windows computers. You will start at the Main Menu (shown on next page).

3-1: Start at Main Menu

• You will constantly return to the Main Menu.



After VitalPro starts in the Win32 Console, you are presented with the Main Menu, similar to the picture above.

The Main Menu is the "command center" - You move to submenus to modify parameters, but return to the Main Menu to make a table (or map). The Main Menu lists all parameters currently selected. It provides an overview of the current analysis scenario.

Menu Level - Note "Main Menu" in the upper right. This is "Menu Level 1". For each submenu, as shown on the next page, the "Menu Level" is indicated: 2, 3, etc.

Highlighting a parameter - One of the parameters is always highlighted. In the example above, "Output Type" is highlighted. You move the highlight by pressing an arrow key. The parameter list scrolls as needed. Note that you do not use a mouse to run VitalPro. This "non-mouse" operation may seem odd at first, but it proves to be fast and easy. Do the following:

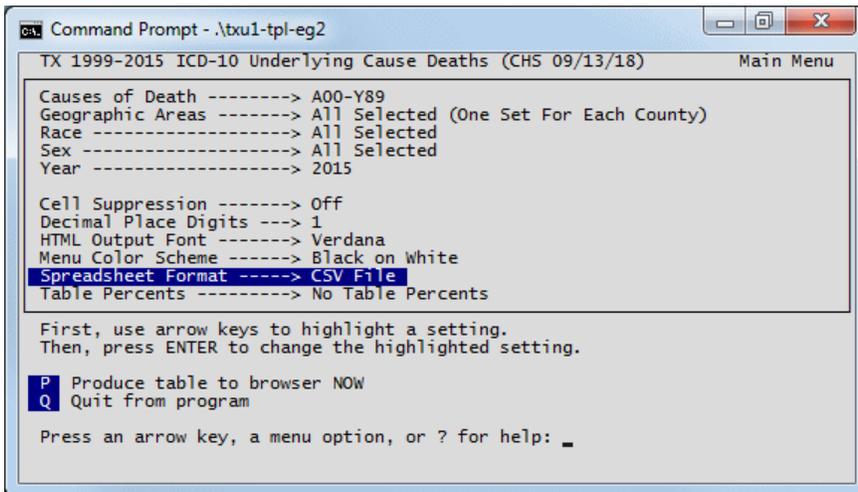
Press ↓ (down arrow key) to move the highlight down.
Keep pressing the "down arrow key" to scroll down more.

The menu tells you what to do - Every VitalPro menu has text at the bottom with guidance on what to do next. For example, the Main Menu text indicates you can press an arrow key (move highlight), the ENTER key (change highlighted setting), P (produce output), Q (quit), or '?' (help).

Changing window appearance - The font size for the Win32 Console running VitalPro may be changed from the Win32 Console toolbar, to suit your screen. "Raster Fonts" set to "8 x 12", as shown, is a reasonable font. On some computers, the Win32 Console may be toggled to full screen (and back) by pressing ALT-ENTER (hold down ALT key and press ENTER key).

3-2: Use a Simple Submenu

- Access a submenu by highlighting an item and pressing ENTER.



Selecting parameter to change - To change a parameter, highlight the parameter (using the arrow keys) and press ENTER.

Quick changes - Some parameters have a relatively simple submenu. Try this:

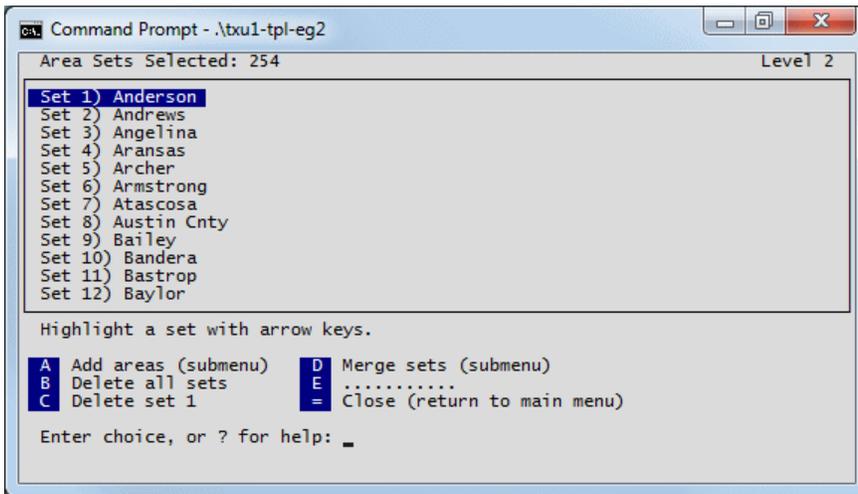
Highlight "Spreadsheet Format" by using arrow keys.
Press ENTER to access the submenu. Select TSV format.
Press ESCAPE (or '=') to return to the Main Menu.

More complex changes - For more complex parameters, a more complicated submenu will appear and help you change the parameter. For example, to change the geographic selection, you would highlight the parameter "Geographic Areas", and press ENTER. Do the following:

Highlight "Geographic Areas" by using arrow keys.
Press ENTER to access the submenu.

3-3: Use Area Sets Submenu

- Each submenu guides you in selecting parameters.



Submenu with scrolling window - This is a typical VitalPro submenu. It has a scrolling window with a list of items, "Area Sets" in this case. One of the items may be highlighted by using the arrow keys.

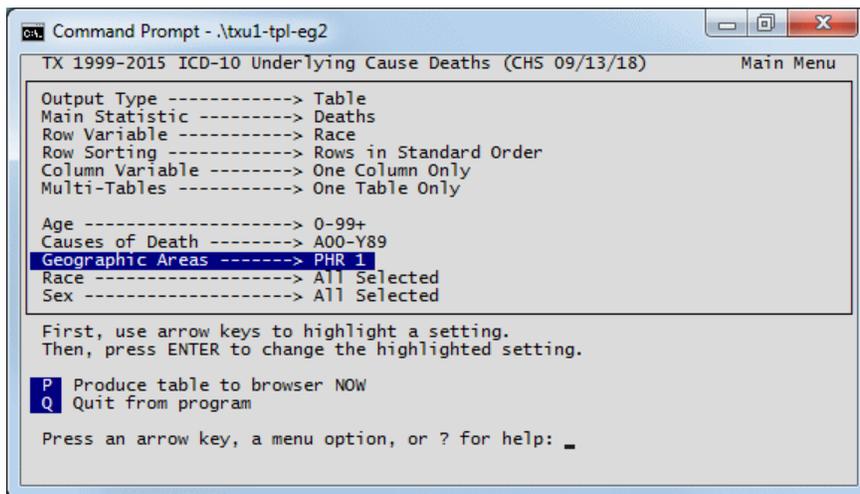
Letters are action items - This submenu has a list of actions, such as "**B** Delete all sets". Pressing the letter (such as 'B') carries out the action.

Adding an area - Carry out the following steps to add an area:

1. Press 'B' to delete all area sets. Confirm if asked.
2. Then, press 'A' to add some areas.
3. Highlight "PHR 1" and press ENTER to add.
4. Then, press ESCAPE (or '=') to return to "Area Sets" menu.
5. Note that an item is added to the scrolling window.
6. Finally, press ESCAPE (or '=') to return to the Main Menu.

3-4: Back at Main Menu

- You always return to the Main Menu after modifying a parameter.



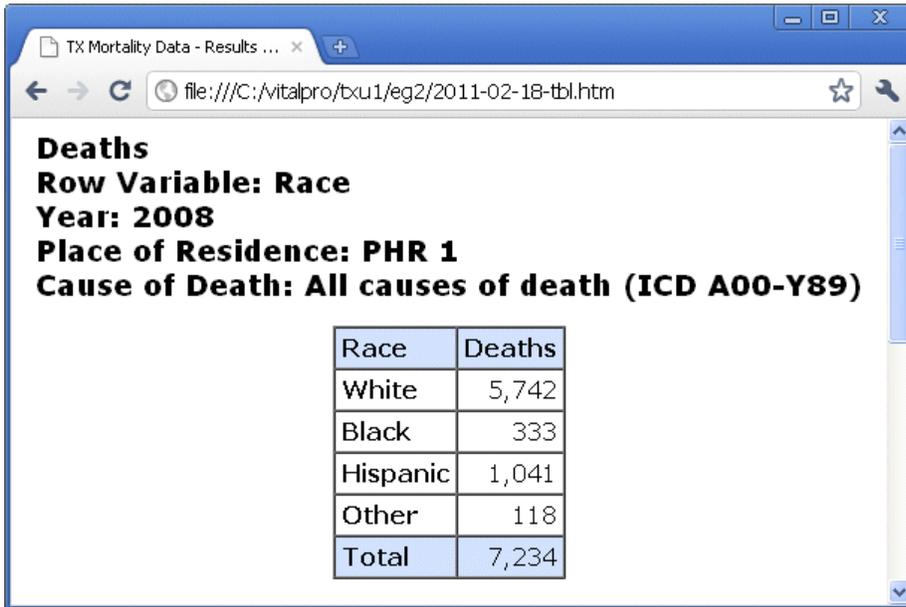
Make sure you're back - You should now be back at the Main Menu, shown above. Note that "Areas" has been modified (it is now set to PHR 1). If you are not back at the Main Menu, get assistance from a co-worker familiar with using the software. Or (in almost all cases), simply press the ESCAPE key a few times.

3-5: Produce a Table

· Press the letter 'P' at the Main Menu to make a table.

Check that you at the Main Menu - You should now be back at the Main Menu. You have used the submenus to select a few parameters, and are now ready to produce your first table!

Press 'P' to produce a table (top shown):



The screenshot shows a web browser window with the following content:

Deaths
Row Variable: Race
Year: 2008
Place of Residence: PHR 1
Cause of Death: All causes of death (ICD A00-Y89)

Race	Deaths
White	5,742
Black	333
Hispanic	1,041
Other	118
Total	7,234

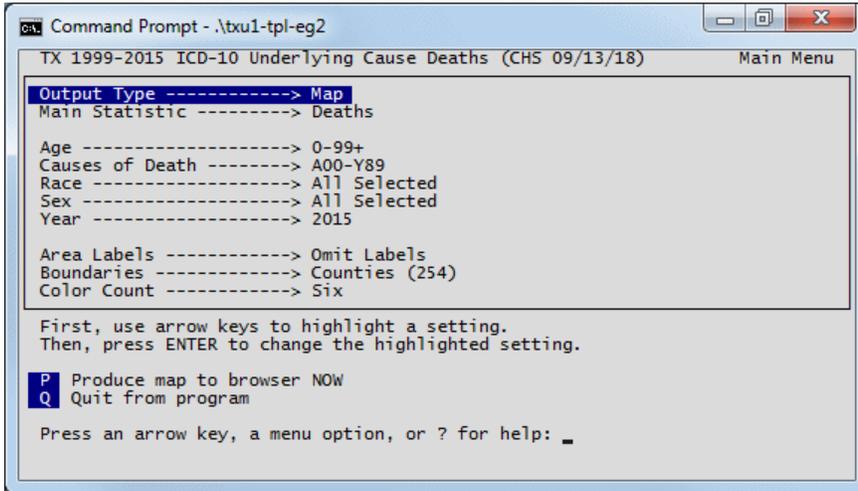
Time required - The amount of time required depends on which parameters are selected and what kind of computer you are using, but is typically a few seconds.

Examining the table - The output will automatically appear in your default desktop browser (which you previously opened). The bottom of the output (not shown above) contains links to spreadsheet, text, and dBASE III output. In addition, there may be links to bar, pie, or line chart output.

1. View (and print) the output in your browser.
2. If desired, click on link at bottom of output.
3. If desired, delete output browser window (CTL-W).
4. Click on VitalPro Main Menu to return to program.

3-6: Switch to Designing a Map

• From the Main Menu, you may switch to designing a map, as shown below.



You've got the basics - You've navigated the Main Menu, used submenus to select parameters, made an output table, and viewed the output. That's about all there is to operating the software! It's a simple, fast, powerful analysis cycle. You should be getting the hang of VitalPro by now. If not, talk with a coworker or contact us.

PNG, PDF, SVG and GIS maps - VitalPro also makes a wide variety of map formats. You can customize the maps in a wide variety of ways to meet your needs: add area labels, switch between boundary types (eg, regional boundaries), set the number of colors to use, select a color palette, set the range type (eg, "equal interval"), select time trend maps (map for each year range). These options are described and illustrated later in the user guide.

Make a map - Since tables and maps are so fundamentally different (eg, maps don't have rows, tables don't have colors), VitalPro displays a simpler menu system (shown above) when designing a map. To make your first map:

1. At main menu, highlight "Output Type" (first option).
2. Press ENTER, and on submenu select "Map" output type.
3. Back on main menu, press "P" to produce a map.

3-7: Continue with Analyses

• **VitalPro lets you quickly carry out a wide variety of analyses.**

Explore the menus - Once you get the hang of it, using the software is pretty easy. If you have gotten this far, you understand the basic program operation. Don't be afraid to experiment and try out different options. Once you have made a table (or map), look it over. If it meets your needs, you're done. If the output is not quite right, look over the parameters on the Main Menu, highlight the parameter you want to change, and press ENTER. A submenu will lead you through the modification process. After setting all parameters as desired, return to the Main Menu and produce another table (or map) by pressing 'P'. Try it:

1. At the Main Menu, modify a parameter or two.
2. Then, press 'P' to produce and view another table.
3. Try some of the sample analyses shown later.

On-line help - VitalPro has been designed to be as self-explanatory as possible. However, it also includes extensive on-line help. To access on-line help from any menu, press the '?' key. A help screen will appear, with information related to the current menu. After viewing the help screen, a scrolling list of help topics may be viewed, for your selection. Try it:

At the Main Menu, press '?' and explore help system.

Quitting VitalPro - The '=' or ESCAPE key always returns to the previous menu. Later, when you are done, you may press the 'q' key from the Main Menu to quit VitalPro.

Suggestions to avoid misinterpretation:

- Double-check header and footer to verify it was the analysis you intended.
- Double-check ICD codes to make sure they are the causes of interest.
- Acknowledge limitations in accuracy of the cause of death.
- Acknowledge possible changes in coding practices by certifiers.
- Use age-adjusted rates to compare rates between different populations.
- Use fewer rows and columns for simpler presentation.
- Use more rows and columns if more comparisons and detail needed.
- Acknowledge the possibility of census miscounts.
- Acknowledge difficulty estimating population in years between censuses.
- Use confidence intervals to help determine statistical significance.
- If uncertainties remain, contact local data experts for advice.

3-8: More Practice Analyses

For additional practice, and to gain more understanding of how VitalPro can speed and simplify data analysis, carry out the following sample analyses. If a variable is not listed (eg, Sex), then all values are selected (eg, Male and Female). Do the following:

Select parameters as shown below.
Then, press 'P' on Main Menu to produce output.

1. Table - Leading causes of death for Texas:

ICD sets - NCHS 51 rankable causes	Row sort - Sorted high to low	Table for each - One only
Area sets - Texas	Row for each - ICD set	Years - Most recent year
Statistic - Deaths	Column for each - Sex	

2. Table - Stroke age-specific death rates for Travis:

Statistic - Death rate	Row for each - Age group	Table for each - One only
ICD sets - I60-I69	Area sets - Travis	Ages - 10-year groups
Year - Most recent	Column for each - Sex	

3. Table - Lung cancer death rates ranked by region:

Statistic - Age-adjusted rate	Adjustment standard - 2000 US	Row sort - Sorted high to low
Row for each - Area set	Table for each - One only	Area sets - All regions
ICD sets - C33-C34	Column for each - Sex	Year - Most recent

4. Table - Diabetes time trends, table for each race:

Statistic - Age-adjusted rate	Adjustment standard - 2000 US	Area sets - Texas
Row for each - Year	Table for each - Race	Years - All years
ICD sets - E10-E14	Column for each - Sex	

5. Map - Diabetes geographic distribution:

Statistic - Crude death rate	Color Palette - Diverging Blue-Red	Area sets - Texas
ICD sets - E10-E14	Boundaries - Counties	Years - Most recent

Chapter 4: Outlines of Submenus

What other menus and options are available? - If you have done the examples in the previous chapter, you should have a good understanding of how to use VitalPro menus to select parameters. However, you have just scratched the surface of the capabilities and power of the software. For your reference, the following pages list all of the Texas VitalPro for Win32 menus. The purpose of the list of menus is to help you become aware of what is available so that you can take fullest advantage of the software. Do this:

Viewing outlines below, explore VitalPro for Win32 menus.

First, design table layout:

- Statistic
- Row Variable
- Row Sorting
- Column Variable
- Multi-Tables

Next, modify data variables:

- Age Groups
- Area Sets
- Cause of Death
- Race Groups
- Sex
- Year Ranges
- Other Settings

When ready, carry out an action:

- Produce Table and Charts
- Produce Map
- Exit VitalPro for Win32

4-1: Table Layout Submenus

· Using VitalPro for Win32, explore menus for designing table layout.

Statistic Menu sets type of result:

- Deaths
- Death Rate
- Age-Adjusted Death Rate
- Mean Age of Death
- Standardized Mortality Ratio
- Years of Potential Life Lost
- Years of Life Lost Rate

Row Menu selects "Row Variable":

- Age
- Education
- Hispanic Origin
- Injury at Work
- Marital Status
- Place of Occurrence
- Place of Residence
- Race
- Sex
- Type of Place of Death
- Underlying Cause
- Year

Possible some of above not in your version.
Column Menu has same options.
Multi-Table Menu has same options.

Row Sorting Menu options:

- Rows unsorted
- Rows sorted by total data, high to low
- Rows sorted by total data, low to high

4-2: Data Variable Submenus

• Using VitalPro for Win32, explore menus for modifying variables.

Race Menu / Sex Menu:

- Select categories as sets
- Delete one / all sets
- Merge sets into new set
- Split previously merged set

Year Ranges Menu:

- Use standard grouping, eg 2-year
- Modify upper / lower end of a range
- Split a range into individual years
- Delete a year range

Age Groups Menu:

- Use standard grouping, eg 10-year
- Modify upper / lower end of a group
- Split a group into separate groups
- Delete an age group

Area Sets Menu:

- Add some areas (submenu)
- Delete one / all area sets
- Merge area sets into new set
- Split area set into sub-areas

Cause of Death (ICD) Menu:

- Add from list menu (common causes)
- Add from tree menu (all ICD codes)
- Add single ICD range (all ICD codes)
- Delete one / all ICD sets
- Merge ICD sets into new set
- Split ICD set into ICD groups

4-3: Other Program Settings

• Using VitalPro for Win32, explore other settings listed below.

Statistical Settings:

- Age-Adjust Standard - Standard Population to Use
- SMR Standard - Standard for Calculating SMR
- YPLL Age Limit - YPLL Cutoff, such as 65

- Decimal Digits - Example: Two in 5.78
- Cell Confidence Level - Set Level, or Turn Off
- Cell Suppression - Hide Result if Low Count
- Table Percents - Row or Column Percents
- Trend Confidence - Set Level, or Turn Off

Output HTML Settings:

- HTML Line Style - Line Style for Output HTML
- HTML Output Font - Text Font for Output HTML
- HTML Padding - Padding for Output HTML Table

Chart / Map Settings:

- Bar Chart Settings - Described Fully Later
- Line Chart Settings - Described Fully Later
- Pie Chart Settings - Described Fully Later

- Map Settings - Described Fully Later

Various Other Settings:

- FIPS in Output - FIPS Codes in Table?
- Menu Color Scheme - Example: Blue on Red
- Spreadsheet - Spreadsheet Data Format
- Tabular Chart - Chart Width, or Omit Chart
- Unique ID - Put ID on Maps and Charts?

- Output Comment - One-Line Note You Enter
- Output Directory - Folder for Output Files
- Output File Prefix - Example: 2021-09-12

4-4: Checklist of Key Tasks

This checklist gives an overview of the main capabilities of VitalPro for Win32, and the tasks you would normally do to analyze the data.

Table layout:

- Select outcome (main statistic)
- Select row variable and sorting
- Select column variable
- Select multi-tables (table series)

Age groups:

- Select grouping (eg 5-year groups)
- Split a group (eg, 10-11 --> 10 + 11)
- Delete a group

For low end of age group:

- Decrease (eg, 11-13 --> 10-13)
- Increase (eg, 11-13 --> 12-13)

For high end of age group:

- Decrease (eg, 10-12 --> 10-11)
- Increase (eg, 10-12 --> 10-13)

Viewing output:

- Produce output from main menu
- View HTML output in browser
- View text output in browser
- View pie / bar / line charts
- View CSV / TSV in spreadsheet

Other tasks:

- Switch to designing a map
- Switch to designing a table

- Change output directory
- Change output prefix

- Use help system

Race sets:

- Select some race sets
- Delete a race set
- Merge some sets
- Split a race set

Area sets:

- Select some area sets
- Delete an area set
- Merge some sets
- Split an area set

ICD sets:

- Select some ICD sets
- Delete an ICD set
- Merge some sets
- Split an ICD set

Chart and map settings:

- Modify bar chart settings
- Modify line chart settings
- Modify pie chart settings
- Modify map settings

Other settings:

- Change decimal places
- Turn on / set cell suppression
- Turn on / set confidence intervals
- Turn on row percents
- Turn on column percents

Chapter 5: Basic Table Layout

What's in this chapter - This chapter explains what we call "table variables". Table variables are the basic variables that determine the basic layout of an output table. VitalPro allows great flexibility in designing your table. Also, the software prevents incompatibilities from occurring.

Table variables are:

- Main Statistic
- Row Variable
- Row Sorting
- Column Variable
- Multi-Tables

5-1: Main Statistic [Outcome]

- **The Main Statistic is the basic type of number in a table (or map).**

What is a Main Statistic? - Every table has a Main Statistic. The Main Statistic (or outcome) is the basic type of data generated in an output table. Each statistic is defined in the glossary, and on-line help files give calculation methods.

Reliability Indicator		Main Statistic
Number of Deaths	Confidence Interval	
--	Yes	Deaths
Yes	Yes	Death Rate
Yes	Yes	Age-Adjusted Death Rate
Yes	Yes	Mean Age of Death
Yes	Yes	Standardized Mortality Ratio
Yes	Yes	Years of Potential Life Lost
Yes	Yes	Years of Life Lost Rate

Reliability indicator - As shown in the table above, a reliability indicator (either number of deaths or confidence interval) is displayed along with most statistics. The **number of deaths** is normally displayed along with each rate and YPLL. Optionally, you may request that **confidence intervals** be displayed as the reliability indicator.

5-2: Rows, Columns, Row Sorting

• **Table rows and columns may be set however you want.**

Rows and columns - Rows are horizontal lines in a data table. Columns go up and down.

Every table has a row variable and a column variable. Rows and columns may be set to any of the following:

- Only one row (or column) (not set to a variable)
- One row (or column) per selected age group
- One row (or column) per selected area set
- One row (or column) per selected sex
- One row (or column) per selected ICD set
- One row (or column) per selected race set
- One row (or column) per selected year range

Sorted rows - Any table may be sorted as follows:

- Rows sorted from high to low, by total data
- Rows sorted from low to high, by total data

Unsorted rows - Examples of rows in standard order (unsorted rows) include:

- Area sets in alphabetical order, such as Bexar before El Paso.
- ICD sets in alpha-numerical order, such as C34 before K74.

5-3: By Variable (Multi-Tables)

· You may automatically produce a series of tables.

```
Deaths
Tabulated by Race-Ethnicity and Sex
Years: 1999
Place of Residence: Anderson
ICD A00-Y99: All Causes Of Death

Race          Male   Female  Total
-----
White          226    202    428
Black           98     47    145
Hispanic        21      5     26
Other            2       0      2
-----
Total          347    254    601

*** Tables omitted to save space ***

Deaths
Tabulated by Race-Ethnicity and Sex
Years: 1999
Place of Residence: Zavala
ICD A00-Y99: All Causes Of Death

Race          Male   Female  Total
-----
White           7       5     12
Black            0       0      0
Hispanic        54      33     87
Other            0       0      0
-----
Total           61      38     99
```

Purpose of multi-tables - Suppose you want to make a separate table for each county. It would be tedious to select the first county, make a table, select the second county, make a table, etc. Multi-tables automates the production of such a series of tables into one operation. The multi-table setting may be one of the following:

- Only one table (the default)
- One table per selected age group
- One table per selected area set
- One table per selected ICD set
- One table per selected race set
- One table per selected year range

Chapter 6: Data Variables

What's in this chapter - This chapter lists and explains data variables you may modify using the software. VitalPro allows great flexibility in selecting and modifying data variables. You may select variables into "ranges" (eg, 2009-2010) and "sets" (eg, "White + Black") just about any way needed.

Here are the data variables covered in this chapter:

- Age groups
- Race
- Sex
- Years

- Causes of death (ICD sets)
- Geographic selection (area sets)

6-1: Geo Selection [Area Sets]

· **Every table has a geographic specification.**

Geographical Areas - The software analyzes Texas data to the county level, and also easily allows pre-set and ad-hoc county groupings. Texas has 254 counties, organized into regions (a group of several counties), as follows:

- 8 Health Service Regions (HSR)
- 11 Public Health Regions (PHR) (Effective 3/1/93)
- 25 Metropolitan Statistical Areas (MSA) (and Remainder)
- 24 Councils of Government (COG)
- 15 Immediate Border Counties (vs Remaining Counties)
- 32 La Paz Border Counties (vs Remaining Counties)

You may select any combination of areas - VitalPro makes it easy to compare results between different groupings ("sets") of geographic areas (counties and county groupings), or limit analysis to specific geographic areas. One or more geographic areas may be combined into an area set, and compared with other sets.

Selection is quick and easy - All geographic operations are grouped together on one submenu, to allow quick and easy selection of any combination of areas desired. A previous interface snapshot (page 3-3) shows the main geographic menu.

6-2: Categorical & Range Vars

Race Groups (Categorical)

You may select any combination of race groups to analyze, by combining races (eg, Black, White) into "sets" as needed. A separate submenu allows easy selection. Keep in mind that differences in health status between races may be due to socio-economic differences.

For 2004 and previous years, each death is classified as White, Black, Hispanic, or Other, as follows: (1) If race is reported as Black, the category is "Black". (2) Of the remainder, if race is reported as Chinese, Japanese, Hawaiian, Filipino, Asian Indian, Korean, Samoan, Vietnamese, or Guamanian, the category is "Other". (3) Of the remainder, those said to be of Hispanic origin are counted as "Hispanic". (4) Of the remainder, if race reported as White, the category is "White". (5) All remaining are classified as "Other".

For 2005 and later years, each death is classified as White, Black, Hispanic, or Other, as follows: (1) Those said to be of Hispanic origin are counted as "Hispanic". (2) Of the remainder, if race is reported as Black, the category is "Black". (3) Of the remainder, if race reported as White, the category is "White". (4) All remaining are classified as "Other".

Sex (Categorical)

You may select Male, Female, or both sexes combined.

Age Groups (Range)

VitalPro lets you combine and analyze age groups in just about any way needed. You may select any contiguous combination of age groups to analyze, such as 22-34. Or, you may select a set of ranges, such as birth-19, 20-39, 40-64, 65-99+.

VitalPro will let you know which age groups are available for use. Standard age groupings, such as 5-year, 10-year, and 20-year age groups are easily selected. Once you have a standard grouping selected, you may combine them in just about any way desired.

Up to age 21, 1-year ages are used (for example, 3 or 11-17). For 22 and over, an age group may use any combination of 5-year groups (for example, 40-44 or 30-49). The highest group is currently 75-99+ (75 and over).

Years (Range)

You may select any continuous range of one or more years to analyze, such as 1980-1983. In addition, you may select a set of year ranges for comparing, such as 1990-1991, 1992-1993, 1994-1995. VitalPro will let you know which years are available for use. Standard groupings, such as 1-year, 2-year, and 3-year groups are easily selected. Year groups may be combined in just about any way desired.

Multi-year death rates are calculated by adding all of the deaths over the time period, and dividing by the sum of the populations over that same period.

6-3: Causes of Death [ICD Sets]

• **Mortality tables always include causes of death.**

ICD-10 codes - VitalPro classifies causes of death with ICD codes. ICD stands for "International Classification of Diseases", the standard system for classifying causes of death. Each disease or condition has a separate 3-digit ICD-10 code (character followed by two digits) (for example, C53 for cervical cancer), or 4-digit ICD code (for example, G71.0 for muscular dystrophy). As of 1999, mortality data use ICD-10.

ICD-9 codes - Data from 1980 to 1998 use the 9th revision of the ICD system (ICD-9). ICD-9 works basically the same as ICD-10, but the codes look somewhat different, and there are many changes in the categories, so ICD-9 and ICD-10 results cannot always be directly compared. Each disease or condition has a separate 3-digit or 4-digit ICD-9 code. For example, 250 for diabetes mellitus, 005.1 for botulism.

ICD groups and sets - An ICD group is one or more consecutive ICD codes (for example, C00-D48 for neoplasms). An ICD set is one or more ICD groups combined. For example, ICD C50 for breast cancer and ICD C53 for cervical cancer may be combined into an ICD set (C50 plus C53). At the broadest level, the ICD-10 system has 19 major disease categories. At the most detailed level, there are about 7,600 four-digit ICD-10 codes. At the broadest level, the ICD-9 system has 17 major disease categories. At the most detailed level, there are about 5,000 four-digit ICD-9 codes. For ICD-9 codes 800-999 (injury and poisoning), VitalPro uses external cause codes (E-codes), standard for mortality analysis.

Selecting ICD groups - VitalPro allows you to select and combine ICD groups to meet your analysis needs. You may select ICD sets by entering the range (for example, enter C16 for stomach cancer, or B20-B24 for HIV/AIDS). Or, you may select from ICD selection menus, organized to allow you to narrow your focus without having to know the specific code. Or, you may select one of several standard ICD lists. For example, for easily calculating leading causes of death, select the NCHS list of 50 rankable causes.

VitalPro automatically formats leading cause reports, to save you the trouble of converting ICD codes such as "ICD E10-E14" and set numbers such as "Set #18" to descriptive terms such as "Diabetes" and "Heart Disease".

Chapter 7: Charts and Maps

What's in this chapter - This chapter explains about settings for VitalPro charts and maps.

Charts are very helpful for scanning results for trends, and for better communicating findings to others. Plus, they make the data more attractive, less boring. VitalPro makes three kinds of graphic charts. Each chart type is more or less best suited for a particular purpose:

Bar Charts

- Compare amounts of different things.
- For example, which race group has a higher birth rate?
- Or, which sex has more deaths from a particular cause?

Line Charts

- Show movement, trends, and comparisons.
- For example, which age group has a higher death rate?
- Or, is a particular rate changing (up or down) over time?

Pie Charts

- Show parts of a whole, a quick overall comparison.
- For example, what proportion of deaths occur in males?
- Or, what proportion of births are to teenage moms?

Maps are a special kind of graphical data display, to show geographic differences in rates and counts. VitalPro makes attractive maps, in PNG, PDF, SVG and GIS formats.

The automatically produced charts and maps can be extensively customized, as explained in this chapter.

7-1: Bar Chart Coloring

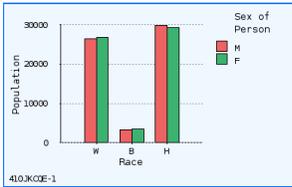
- Background color behind the chart.
- Color palette to use for the bars.
- First color in palette to use for bars.

Below are shown the settings, with examples:

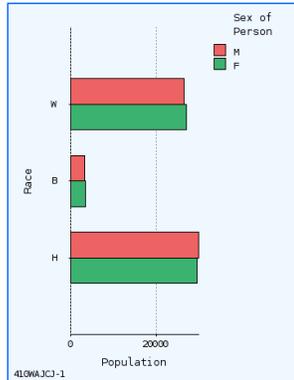


7-2: Bar Chart Layout

Vertical or Horizontal Bars

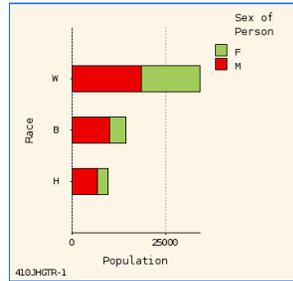


Vertical Bars

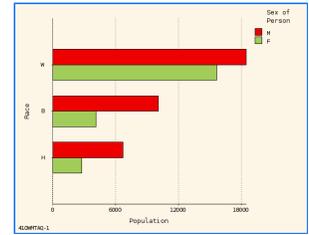


Horizontal

Stacked Bars?

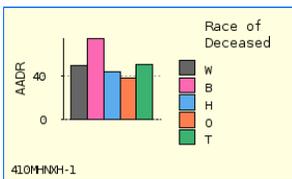


Stacked Bars

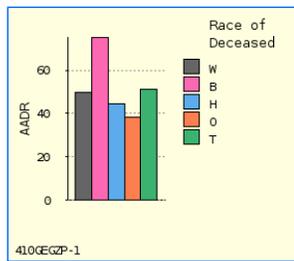


Not Stacked

Height of Each Bar (9 options)

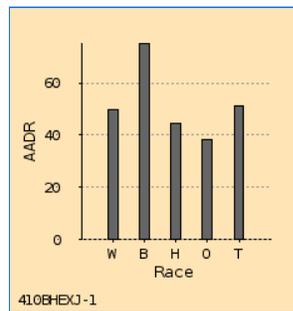


2 cm High

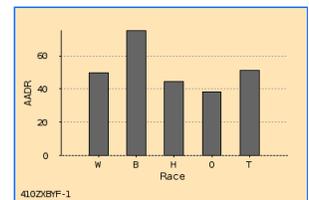


4 cm High

Width of Each Bar (8 options)

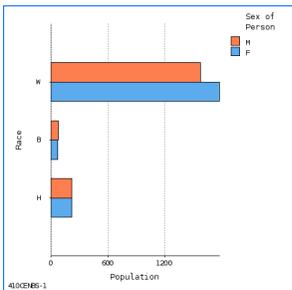


0.2 cm Wide

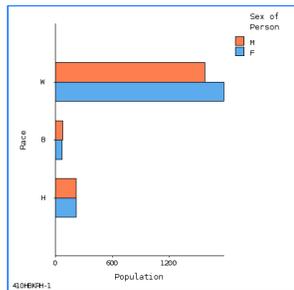


0.6 cm Wide

Include Grid Lines?

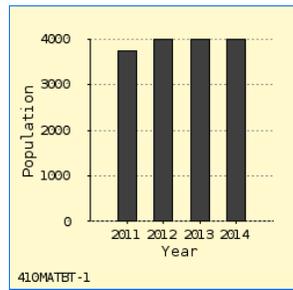


Include Grid

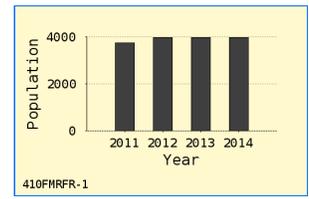


Omit Grid

Font Size for Chart Text (8 options)



10 pt Font



14 pt Font

7-3: Line Chart Settings #1

Eight ways to customize Vitalnet line charts:

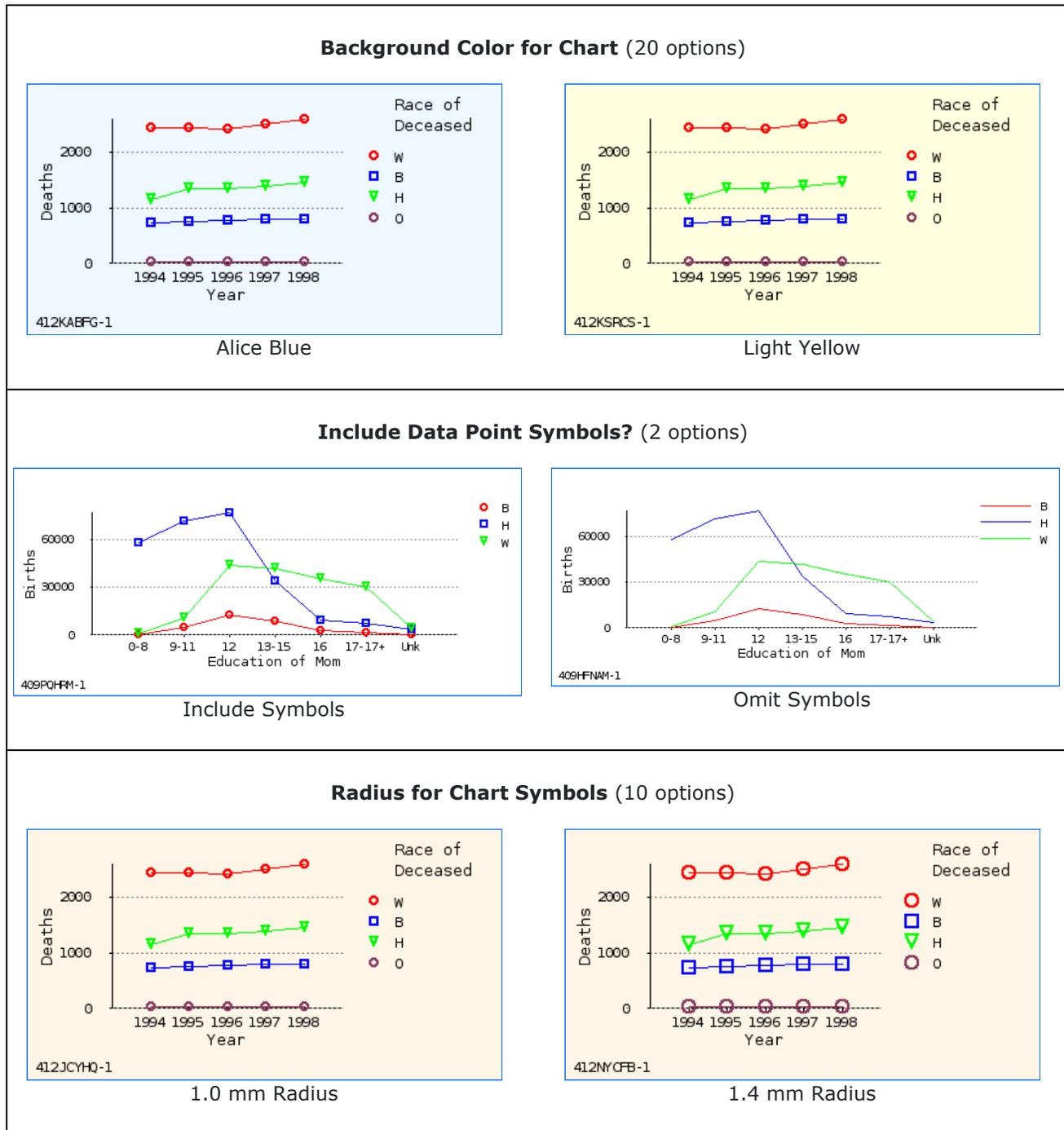
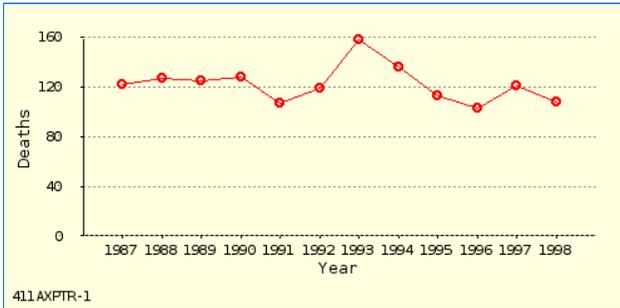


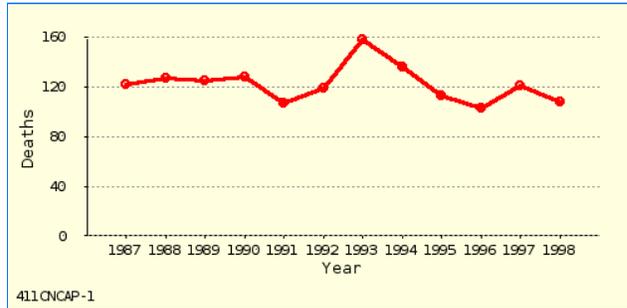
Chart Height - Set height, eg 3.0 cm (9 options).

7-4: Line Chart Settings #2

Width of Lines (3 options)

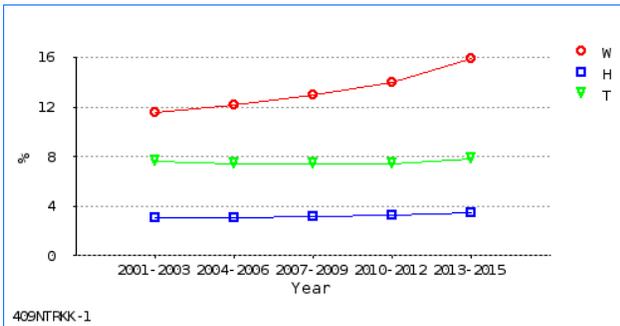


Thin Lines

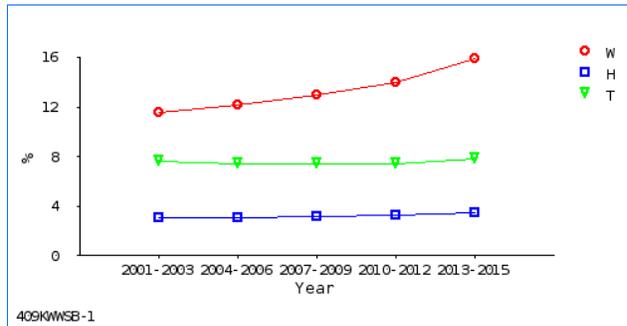


Thick Lines

Include Grid Lines? (2 options)

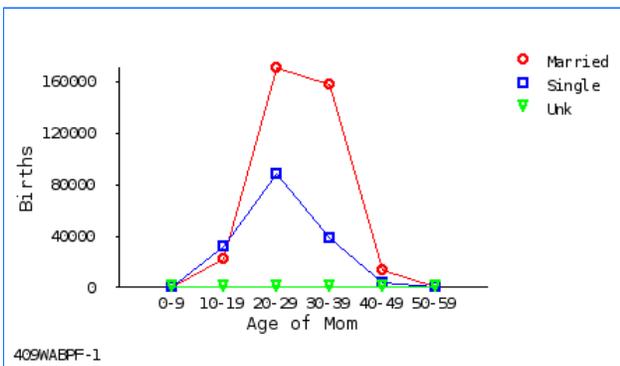


Include Grid



Omit Grid

Colored Lines, or Black + White (2 options)



Colored Lines



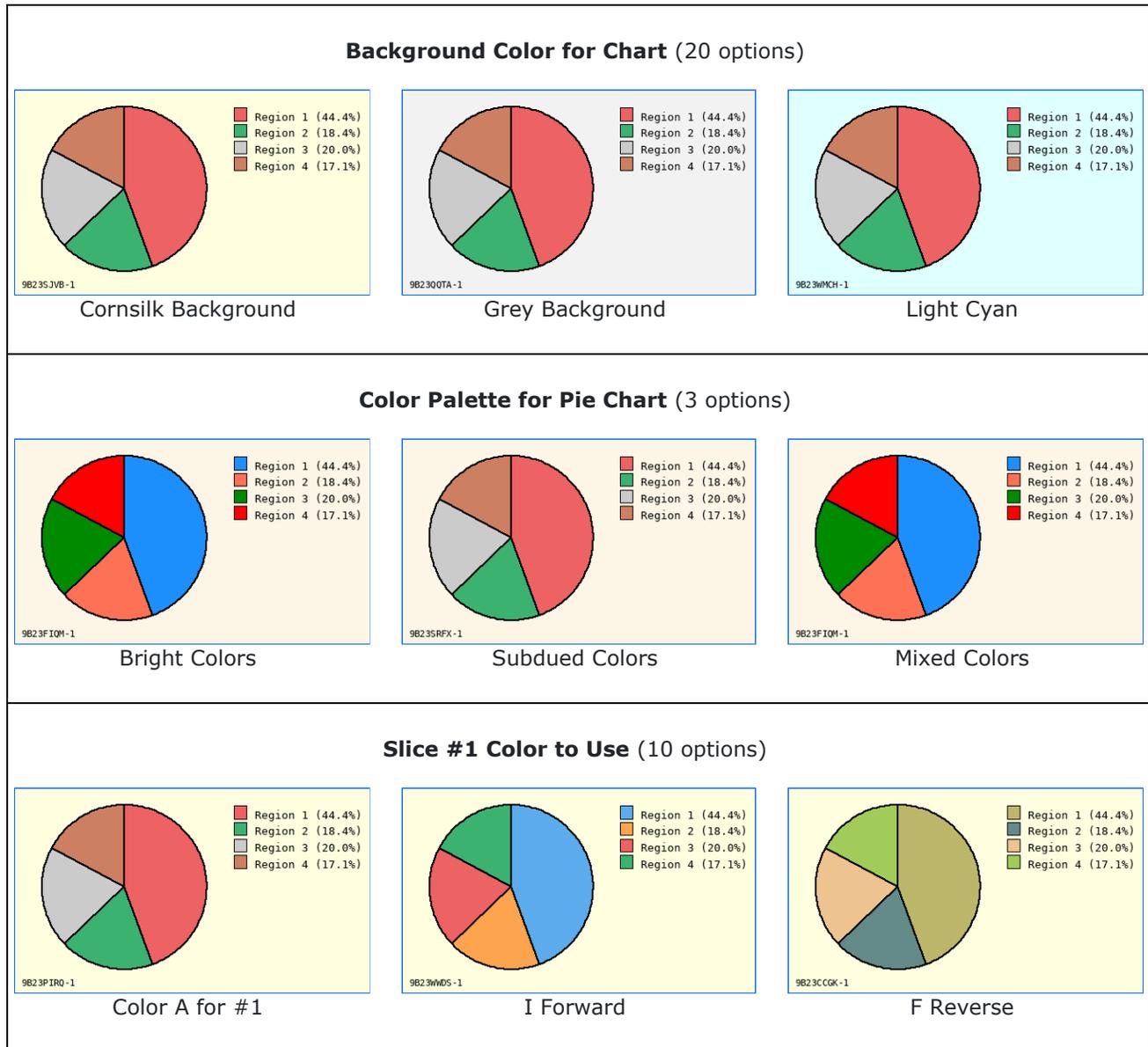
Black + White Lines

Font Size - Select font size, eg 9 pt (8 options).

7-5: Pie Chart Coloring

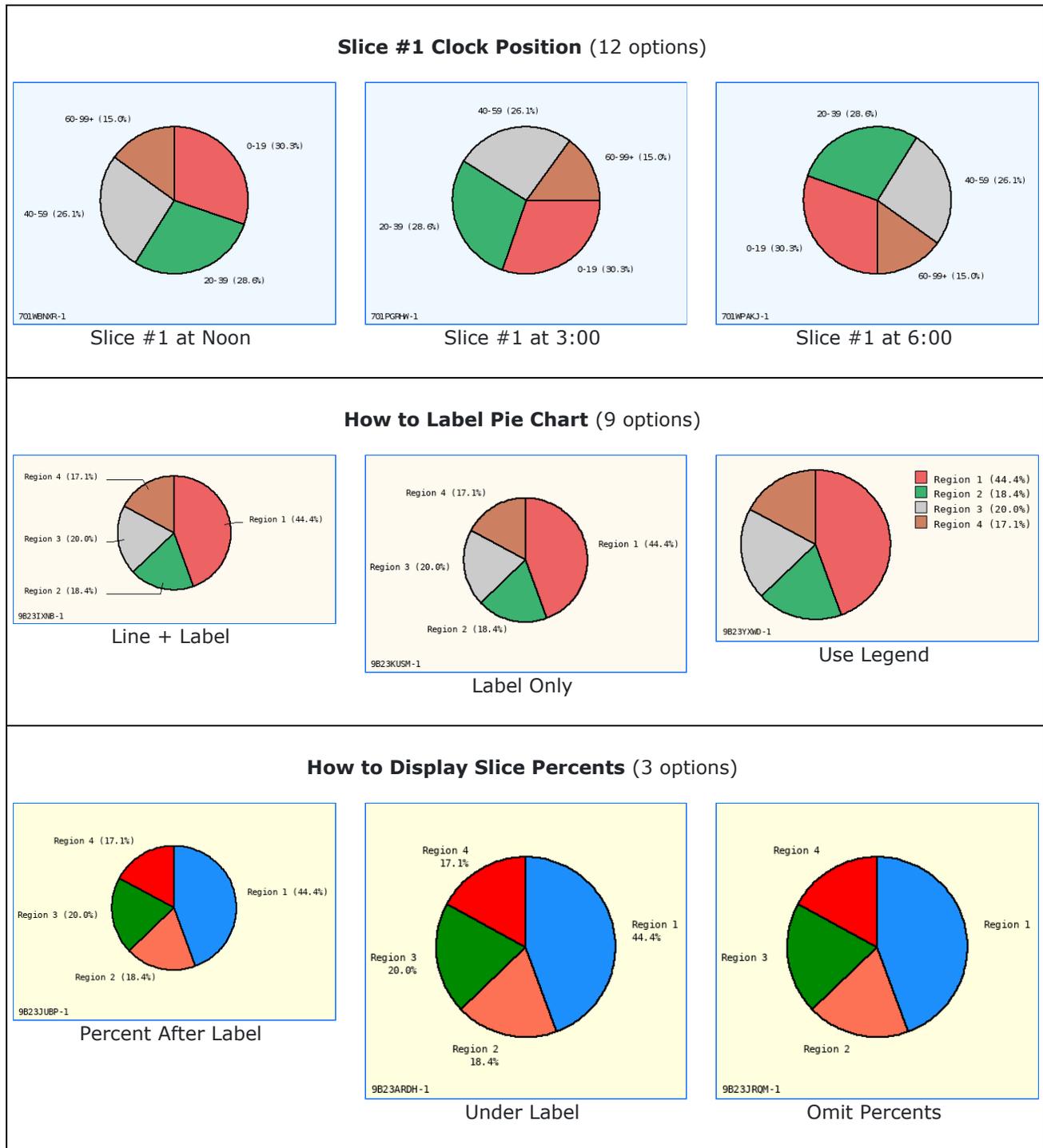
Three settings for customizing pie chart coloring:

- The background color behind the chart.
- The color palette to use for the pie chart.
- First color in palette to use (for slice #1).



7-6: More Pie Chart Settings

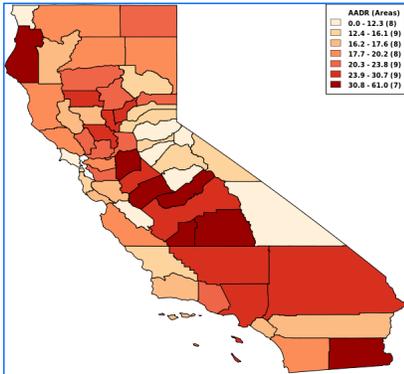
Four settings for customizing pie chart layout:



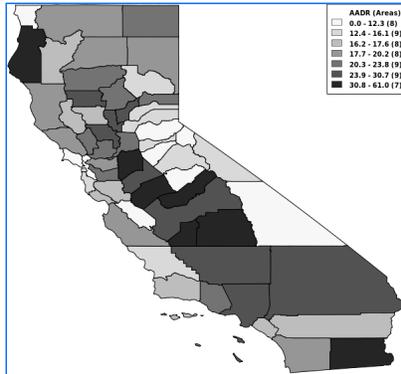
Pie Radius - Select radius, eg 2.0 cm (9 options).

7-7: Map Settings #1

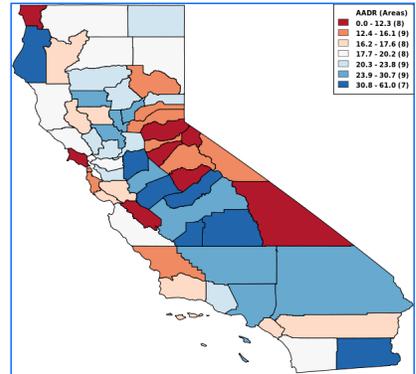
Color Combination (36 options)



Orange-Red

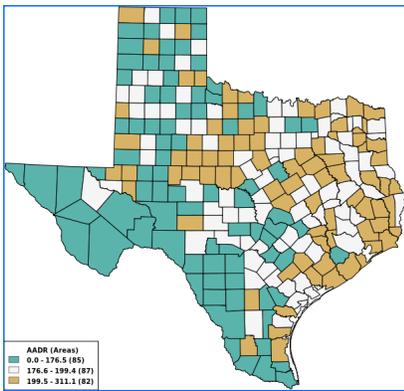


Grey

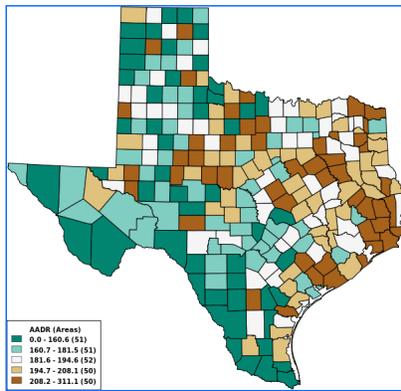


Red-Blue

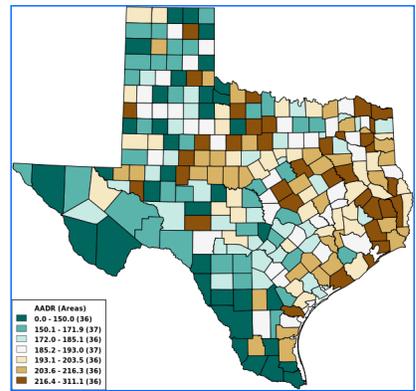
Number of Ranges (8 options)



3 Colors

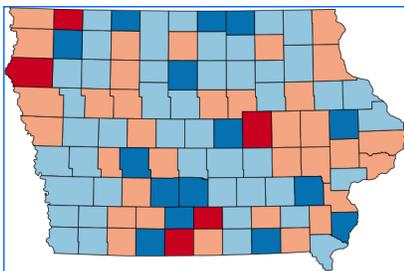


5 Colors

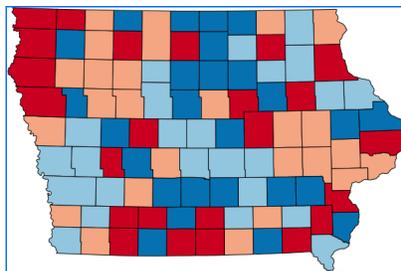


7 Colors

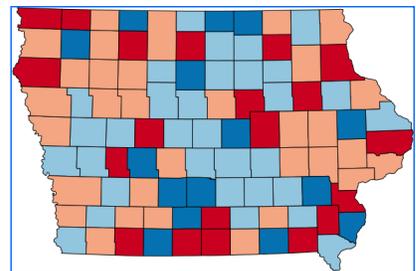
How to Set Ranges (3 options)



Equal Ranges



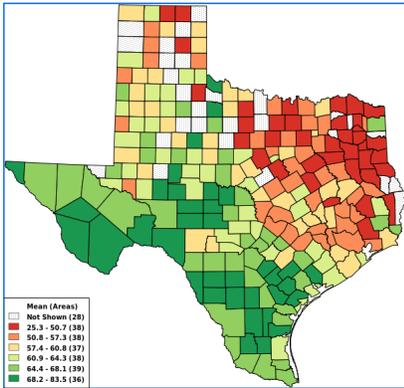
Equal Counts



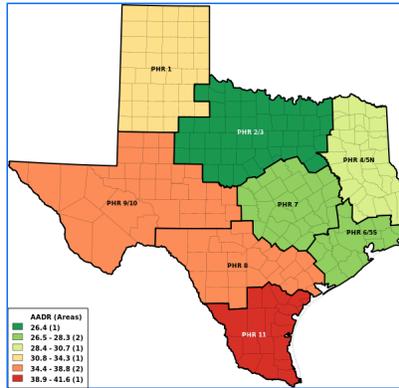
Natural Breaks

7-8: Map Settings #2

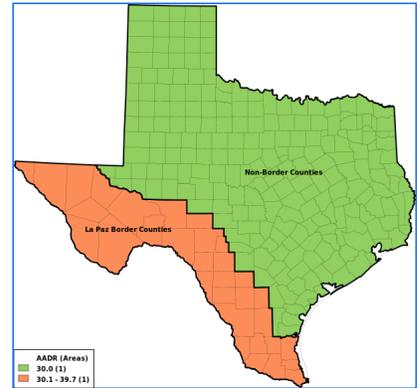
Boundaries to Display (6 options)



County Boundaries

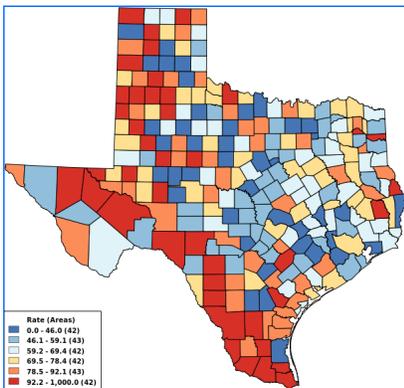


HSR Boundaries

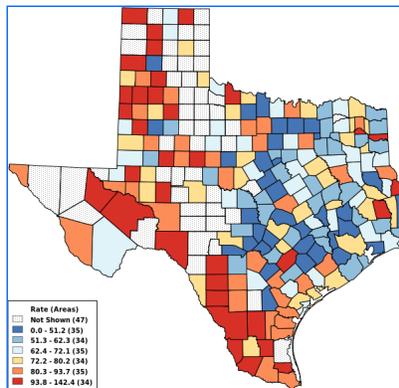


Border Counties

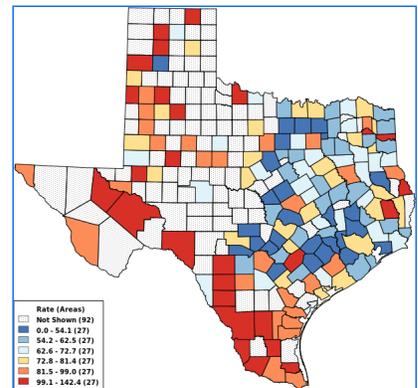
Cell Suppression (14 options)



Suppression Off

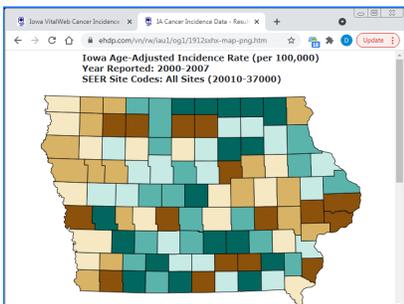


Suppress < 10

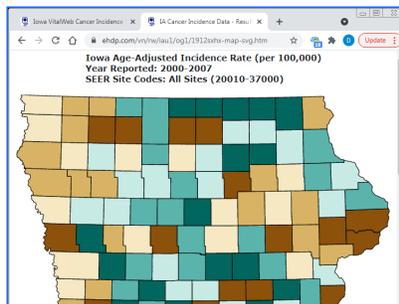


Suppress < 30

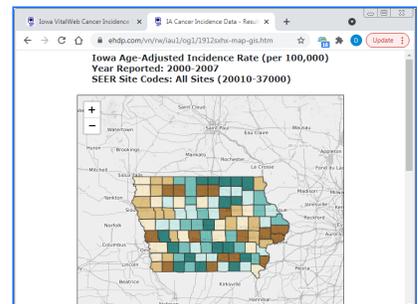
Map File Format (PNG, PDF, SVG, GIS)



PNG Map (Imports Best)



SVG Map (Prints Best)



GIS Map (Interesting)

7-9: Map Settings #3

Color Palettes - VitalPro uses 36 beautiful map color palettes. These palettes have been proven through published research, and used in standard atlases. Trying to pick colors by hand is tedious, and usually produces bad-looking results. VitalPro color palettes save lots of time and insure your results are successful.

1	2	3	4	5	6	7	8	9	Diverging Palette	BW	CB
									Brown-BlueGreen	-	Y
									Pink-Green	-	Y
									Purple-Green	-	Y
									Purple-Orange	Y	Y
									Red-Blue	-	Y
									Red-Grey	-	-
									Red-Yellow-Blue	-	Y
									Red-Yellow-Green	-	-
									Spectral	Y	-
1	2	3	4	5	6	7	8	9	Sequential Palette	BW	CB
									Blue	Y	Y
									Blue-Green	Y	Y
									Blue-Purple	Y	Y
									Green-Blue	Y	Y
									Green	Y	Y
									Grey	Y	Y
									Orange	Y	Y
									Orange-Red	Y	Y
									Purple-Blue	Y	Y
									Purple-Green	Y	Y
									Purple-Red	Y	Y
									Purple	Y	Y
									Red-Purple	Y	Y
									Red	Y	Y
									Yellow-Green	Y	Y
									Yellow-Blue	Y	Y
									Yellow-Brown	Y	Y
									Yellow-Red	Y	Y

BW - OK for black and white photocopying? **CB** - OK for people with red-green color blindness? **Note:** All palettes are suitable for desktop color printing.

Text Font for Map - 9 font options for displaying area labels: [Serif Normal] [Sans-Serif Normal] [Monospace Normal] [Serif Bold] [Sans-Serif Bold] [Monospace Bold] [Serif Italic] [Sans-Serif Italic] [Monospace Italic]

Time Trend Maps - Vitalnet can make a series of maps, one for each selected year range. The map series is cycled within a special interface. The data ranges are the same for each map in the series.

7-10: Smart Output

Vitalnet is smart about making output. Whenever you make a table, Vitalnet also usually makes one or more accompanying charts. But it only produces the charts that make sense. If a chart would look terrible, or not be epidemiologically valid, the software does not make it.

Vitalnet avoids making misleading or useless charts. To prevent misinterpretation and embarrassing results, Vitalnet intelligently decides when it appropriate to make a chart, as explained below:

Bar charts are only made if the following conditions are met:

- 1 to 20 rows (groups of bars).
- 1 to 10 columns (bars per group).
- No suppressed results (for stacked bar chart).

Line charts are only made if the following conditions are met:

- Range rows (such as age or year).
- No breaks in ranges (not 2000, 2002).
- Rows not sorted. No suppressed results.
- No more than 10 lines (10 columns).

Pie charts are only made if the following conditions are met:

- Cumulative data (counts, some rates).
- One set of numbers (one row or column).
- 2 to 9 pie slices. No suppressed results.

Time trend maps are only produced when all selected year ranges are the same width. For example, 1995-1996, 1997-1998, 1999-2000 is OK. But 1995-1996, 1997-1998, 1999 is not OK. Also, at least 2 year ranges are required. So if you just have 1995-1996 (a single range) selected, Vitalnet does not make a time trend map.

Time trend analysis, when making a table with year rows, is only carried out when: 1) enough year ranges are selected, 2) there are no gaps in the ranges, 3) the ranges are the same width, and 4) the rows are not sorted. When these conditions are met, the time trend analysis is epidemiologically valid.

Chapter 8: Other Parameters

What's in this chapter - This chapter explains various other key parameters, that are neither table variables nor data variables.

Here are the other parameters covered in this chapter:

- Cell Confidence Level
- Cell Suppression
- Decimal Digits
- Trend Confidence
- CSV/TSV and DBF Output

8-1: Confidence Intervals

Statistical reliability - In general, results that are based on a smaller number of events are less reliable than those based on a larger number. Confidence intervals allow you to formally estimate the statistical reliability of your results.

Confidence interval definition - A confidence interval (also known as confidence limits) is the range of values within which the true value of a variable is thought to occur, with a specified confidence level (95%, 90%, 80%, etc.). A higher confidence level (for example, 99%) implies greater confidence that the true value is included, so results in a larger interval than a lower confidence level (for example, 80%). Use the 95% confidence level (a somewhat arbitrary but very widely used standard) unless you have a reason to do otherwise.

Methods for confidence intervals - VitalPro uses the Poisson distribution to calculate most confidence intervals, using the method described in "Scientific Tables", Diem and Lentner (ed), Geigy, 1970 (equations 802a and 802b on page 189). Confidence intervals for standardized mortality ratios are calculated using the method of Rothman and Boice described in "Research Methods in Occupational Epidemiology", Checkoway, Pearce, and Crawford-Brown, Oxford University Press, 1989, (equations 5.7 and 5.8 on page 127). Confidence intervals for trend analysis are calculated using Student's t-distribution.

8-2: Decimal Places

VitalPro allows specification of the number of decimal places in your results. For example, the number 64.29 has two decimal places. The number 64 has zero decimal places.

8-3: Cell Suppression

· You may suppress cells with low numbers of deaths.

How cell suppression works - Cells with low numbers of deaths may be blanked out with an asterisk (*). You set the level at which results will be suppressed. Line charts and pie charts are not included if any cells are suppressed, because the charts are too disrupted by the cell suppression.

Suppression of row / column totals - It's a little complicated. A row total will be **suppressed** if there is exactly one suppressed cell in the row, or if the row total is low enough to be suppressed. A row total will be **displayed** if there is more than one suppressed cell in the row, unless the row total is low enough to be suppressed. The same rules apply to columns.

Use of cell suppression - Cell suppression may be used for certain data tables to be released to the public, where there is a concern that low numbers should not be published, due to potential confidentiality issues. Concerns about reliability of small numbers are probably better addressed by using confidence intervals, or by including the number of deaths as a reliability indicator.

Cell suppression in dBASE III files - A suppressed result is indicated as "-1".

Deaths Tabulated by Age and Sex Years: 1999 Place of Residence: Travis ICD B20-B24: Human Immunodeficiency Virus [HIV] Disease			
Age	Male	Female	Total
Birth-14	*	*	*
15-24	*	*	*
25-34	5	*	*
35-44	28	4	32
45-54	16	*	*
55-99+	3	*	*
Total	52	8	60

Analysis Footnotes:
Unique ID, for Keeping Track of Analyses: 428ZRYWE
Output Produced: Sat Apr 28 17:13:57 2001, by Texas VitalNet
Deaths Classified by: ICD-10, Underlying Cause, County of Residence
Suppress Cell [*]: If 2 or Fewer Deaths In Cell
Suppress Row/Column Total [*]: If Exactly One Suppressed Cell in Row/Column
Mortality Data Source: TDH Bureau of Vital Statistics

Table with Suppressed Cells

8-4: Trend Analysis

- VitalPro automatically carries out trend analyses.

Purpose of trend analysis - When analyzing data with a year (or year range) for each row, you usually want to know: Is there a trend up or down? Is the rate increasing or decreasing?

When trend analysis is done - Trends are calculated if: (1) the "row variable" is year, (2) rows are not sorted, and (3) year groupings have equal ranges, for example 2000-2001, 2002-2003, 2004-2005.

Least-squares line shows the trend - VitalPro carries out a "least-squares" analysis for the time series. This finds the best straight line to describe the data for each data column. The line is defined by the value for the first year ("y-intercept"), and the amount of change per year range ("slope").

Confidence intervals show if significant trend - VitalPro calculates a confidence interval for the slope. If the confidence interval doesn't include 0, there is a significant trend.

Year	Male Rate	Female Rate	Total Rate
1990	XXXXXXXXXXXXXX	XXXXXXXXXXXXx	XXXXXXXXXXXXx
1991	XXXXXXXXXXXXx	XXXXXXXXXXXXx	XXXXXXXXXXXX
1992	XXXXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX
1993	XXXXXXXXXXXXx	XXXXXXXXXXXXx	XXXXXXXXXXXX
1994	XXXXXXXXXXXXx	XXXXXXXXXXXXx	XXXXXXXXXXXX
1995	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX
Total	XXXXXXXXXXXX	XXXXXXXXXXXXx	XXXXXXXXXXXXx

Death Rate (per 100,000)
 Age: Birth-11m Years
 Place of Residence: Texas
 ICD 001-999: All Causes Of Death

Detailed Least-Squares Analysis, to Detect Linear Trend:

Column	1990 Y-intercept	Slope	95% CI (4 df, t=2.7764)
Male	941.1	-41.76	-59.37 to -24.16 **
Female	742.9	-29.64	-44.32 to -14.96 **
Total	844.1	-35.81	-50.58 to -21.05 **

Y-intercept and slope may be used to draw least-squares line.
 If confidence interval (CI) does not include 0, trend is significant [**].

Significant Downward Trends

8-5: TXT, CSV, DBF Output

· **Results may be saved to a text, spreadsheet, or database file.**

Saving to a second format - The output in your desktop browser always includes (at the bottom of the output) links to text (txt), spreadsheet (csv, tsv, or dif), and dBASE III (dbf) output. To view or download one of the second formats, simply click on one of the links.

TXT file - Text output is pure ASCII text, for example as shown on the previous page.

CSV file - CSV (comma-separated-value) output has a comma between each output item, and each text item is surrounded by "double quotes", as shown below. CSV format is ideal for importing into spreadsheet software. TSV (tab-separated-value) format is similar, but uses tabs instead of commas between items.

Browser differences - Internet Explorer automatically displays CSV output in Excel (if installed). Other browsers may be configured to automatically display CSV output in a spreadsheet program. Or you may need to right-click on the link, and select "Open" to open the file.

```
"Deaths"
"Tabulated by Race-Ethnicity and Sex"
"Years: 1999"
"Place of Residence: PHR 1"
"Causes of Death (ICD-10): A00-Y99: All Causes Of Death"

"Race", "Male", "Female", "Total"
"-----"
"White", 2797, 3063, 5860
"Black", 206, 174, 380
"Hispanic", 508, 335, 843
"Other", 15, 10, 25
"-----"
"Total", 3526, 3582, 7108

"Analysis Footnotes:"
"Unique ID, for Keeping Track of Analyses: 428GNXCA"
"Output Produced: Sat Apr 28 17:09:40 2001, by Texas VitalNet"
"Deaths Classified by: ICD-10, Underlying Cause, County of Residence"
"Mortality Data Source: TDH Bureau of Vital Statistics"
```

Example of CSV Output

DBF file - Results may also be saved to a dBASE III database file (dbf extension). DBF files are excellent for importing into almost any data analysis, graphics, spreadsheet, mapping or other presentation software. Field names are automatically imported along with the data. Suppressed cells are represented by the number "-1".

DBF file limitations - (1) Header and footer information listing analysis parameters is not included in database files. To help out, you may want to make the name of the dBASE file the same as the table ID, such as "405MFAQB.DBF" so you can refer to the table later. (2) Only 128 columns may be saved to a dBASE III file. This rarely presents a problem, because unlimited rows are allowed.

Glossary

Age-adjusted death rate - Deaths per 100,000 population, adjusted to a standard population (such as US 1940 or US 2000), by the direct method. Age-adjusted rates are often better for making comparisons than unadjusted rates, because they adjust for differences in age distribution between populations. An age-adjusted rate is a summary synthetic measure. Besides calculating overall age-adjusted rates, it is also recommended to compare age-specific rates.

Age-adjustment standard - A standard population for calculating an age-adjusted death rate. The 1940 and 2000 US Census population are the most common standards.

Area set - One or more areas combined.

ASCII file - A text file, with only alphabetical, numerical, and punctuation characters, like you would see in normal text. Vitalnet can produce output in ASCII format.

Cause of death - Any condition which leads to or contributes to death, and is classifiable according to the International Classification of Diseases (ICD) system.

CDC - Centers for Disease Control and Prevention. US federal health agency.

Cell - A space for a single numerical result in a table, at a row-column intersection.

Cell suppression - An asterisk "*" is placed in cells with fewer events (such as deaths) than a limit set by the user. Row / column totals with exactly one suppressed cell in the row / column are also suppressed. If more than one cell in the row / column is suppressed, the row / column total may be displayed.

Columns - Vertical groupings of data in a Vitalnet table, such as a column for each race group.

Confidence interval (confidence limits) - A range of values within which the true value of a variable is thought to lie, with a specified level of confidence. For a result of 23.5, a confidence interval might be (23.1-23.9). The smaller the interval, the more reliable the result, so 23-24 is more reliable than 13-34. If the 95% confidence intervals do not overlap, there is probably a statistically significant difference. Vitalnet uses several methods to calculate confidence intervals. The output table documents which method was used.

Confidence level - The likelihood that the true value of a variable is within a confidence interval. For example, for confidence intervals at the 95% level, we are statistically 95% certain that the actual value of the variable is within the interval.

CSV format - Comma-separated-value format. CSV files are readily imported into spreadsheet software. Each output item is separated by a comma from surrounding items, and each output text item is surrounded by "double quotes". A comma-separated-value file has "csv" extension. Similar to TSV format.

Data warehouse - A software system, such as Vitalnet, making large complex databases readily available for querying and analysis. A related term is "data mining", finding unexpected relationships in a data set, for further study. Data mining is similar to exploratory data analysis. Vitalnet is excellent at data mining. Of course, keep in mind that the more you look, the more unusual events you will find, just by chance.

dBASE III format - A widely used file format originally for the database software of the same name. Files in dBASE III format may be readily imported into almost any data analysis, graphing, mapping, or other presentation software. Uses dbf extension. Suppressed cells are represented as the number "-1".

Death rate - Deaths per 100,000 population. May be used to compare the burden of disease between different groups. Also called crude death rate.

DIF format - Data interchange format. DIF files are readily imported into spreadsheet software. The DIF format is too complex to explain in this glossary. Has "dif" extension.

Denominator - The number on the bottom of a fraction. Population data are often referred to as "denominator data", as they are used as denominators to calculate population-based rates.

Export - Produce output that can be read into other computer programs. Vitalnet produces ASCII text (txt), comma-separated-value (csv), HTML (htm), and dBASE III (dbf) files for export.

Filter variable - A variable solely used to filter which records are included in the output. For example, for a single table with race rows and sex columns, age 10-19 is a filter variable.

FIPS Code - FIPS = "Federal Information Processing Standards". A five-digit number which uniquely identifies counties, territories, and certain other areas in the United States. States have two-digit FIPS codes.

Footer - Last part of a Vitalnet table. Lists less important details of the analysis, such as the date produced, and data sources. Also contains a unique ID to assist in keeping track of analyses.

Header - First part of a Vitalnet table. Lists key analysis parameters, such as years analyzed.

ICD - International Classification of Diseases. A widely used system for classifying diseases and injuries. Each disease or set of diseases has an ICD code or ICD group assigned to it. Vitalnet uses the ICD-9 system, for 1979-1998 mortality data, and the ICD-10 system, for 1999-present mortality data. An "ICD code" is a single ICD number representing a single disease or injury. For example, ICD E10 for insulin-dependent diabetes. An "ICD group" is a range of continuous ICD codes. For example, ICD E10-E14 for diabetes mellitus. An "ICD set" is one or more ICD groups or codes combined, for example ICD C50 (breast cancer) and ICD C53 (cervical cancer).

Import - Read information into a computer program. ASCII text, CSV, TSV, DIF, HTML, and dBASE III files from Vitalnet are easily imported into word processing, spreadsheet, data analysis, mapping, graphing, and other presentation software programs.

Leading causes for ICD-10 - The ten causes of death with the highest number of deaths, out of a standard National Center for Health Statistics list of 51 rankable causes. Vitalnet makes it easy to select and rank the 51 cause list.

Least-squares - A standard method for fitting the best straight line to a set of points. Produces a Y-intercept and a slope defining the least-squares line.

Mean age of death - If the ages were 50, 51, and 58, the mean age of death is $(50 + 51 + 58) / 3 = 53$

Multiple age groups - One age group for each table row (or column). Example: 0-19, 20-59, 60-99+.

Multiple cause mortality data - Data which include all causes of death listed on the death certificate. Contrast with underlying cause mortality data.

Multiple causes of death - All diseases or injuries which led directly to death, or all circumstances of the accident or violence which produced the fatal injury.

Natural Breaks - Method for determining map ranges. Minimizes "squared deviations from class means".

NCHS - National Center for Health Statistics. US health statistics agency. Part of the CDC.

Place of occurrence mortality data - Data compiled by the location the death occurred, without regard to the place of residence of the deceased. Vitalnet does not currently analyze for place of occurrence.

Place of residence mortality data - Data compiled by the place of residence of the deceased, without regard to the location where the death occurred. Vitalnet analyzes mortality data by place of residence.

Population - The number of people living in an area.

Rows - Horizontal lines in a Vitalnet table, such as a row for each race group.

Row sort settings - Vitalnet rows may be sorted in ascending or descending order.

Set - A combination of one or more things. For example, several areas may be combined into an area set.

Single age group - Only one age group (30-49, for example) is selected. A single age group is used for tables that do not have age columns or age rows.

Standardized mortality ratio (SMR) - The ratio of the expected number of deaths to the observed number of deaths. The expected number of deaths is derived by applying a standard set of rates (usually state or national rates) to a population. SMRs help assess whether the mortality in a population is higher than expected.

Statistic (Main Statistic) - The basic type of numerical result displayed in a table, chart, or map. For example, birth rate, death rate, population, pregnancy rate, etc.

Table - A set of results produced by Vitalnet. A table has several parts:

1. Header - basic analysis settings
2. Data section - numerical results
3. Bar graphs - horizontal charts
4. Footer - other analysis settings

Tabular chart - A section of a Vitalnet table. Gives an scaleable graphical representation of the data. May be omitted from the output table.

TSV format - Tab-separated-value format. TSV files are readily imported into spreadsheet software. Each output item is separated by a tab from surrounding items, and each output text item is surrounded by "double quotes". A tab-separated-value file has "tsv" extension. Similar to CSV format.

Underlying cause - The disease or injury that initiated the train of events leading directly to death, or the circumstances of the accident or violence which produced the fatal injury. A single underlying cause is assigned to each death.

Underlying cause mortality data - Data which include only the underlying cause of death listed on the death certificate. Contrast with multiple cause mortality data.

Unknown Values - Unknowns are automatically inserted into a Vitalnet table. For example, a separate row (or column) for unknown race. The rate is assigned as zero for an unknown category, since there is no population denominator to use. Some fields, such as sex for certain data sets, are never unknown, so unknowns are left off the table. When, such as for age-adjusted rates, the unknown variable (age) is different from the rows or columns, the number of unknowns for age is shown below the table.

Vitalnet / VitalPro / VitalWeb - Vitalnet is data warehouse / data analysis software for analyzing health data sets. VitalPro is a Vitalnet system that runs directly on a PC, for example VitalPro for Win32. VitalWeb is a Vitalnet system that runs over the internet, for example VitalWeb Ajax.

Windows - Microsoft PC operating systems. VitalPro runs under any version of Windows.

World Wide Web (WWW) - A widely used part of the internet that may be easily accessed with a web browser. Vitalnet runs on the WWW.

Years of potential life lost (YPLL) - Sum of the years of life lost by persons who die "early". Early death is usually defined as death occurring before the age of 65 (the YPLL age limit). For example, death at age 40 (40.5) results in 24.5 YPLL to age 65. YPLL is a widely used measure of premature mortality.

YPLL age limit - The age used for calculating YPLL. The most common YPLL age limit is 65.

YPLL rate - YPLL per 100,000 population in the appropriate age category. The YPLL rate up to age 65 is calculated as follows: (YPLL up to age 65) / (population for age group 0-64). Not commonly used.