NAVAL HEALTH RESEARCH CENTER

EPISYS

(EPIDEMIOLOGICAL INTERACTIVE SYSTEM)

USER'S GUIDE

Version 1.0

1996

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EPISYS

Epidemiological Interactive System

Version 1.0
1996

User's Guide

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Preview

The Epidemiological Interactive System (EPISYS) is a computerized program and database that enables researchers to rapidly access, analyze, and summarize large amounts of epidemiological data. This version of EPISYS contains inpatient hospitalization, demographic, and career history records for all Navy enlisted personnel on active duty between 1 January 1980 and 30 September 1994. The hospitalization data contained in EPISYS are obtained from the Naval Medical Information Management Center, Bethesda, Maryland, (formally the Naval Medical Data Services Center) and is updated quarterly. Demographic, occupational, and other service history information is provided by the Navy Military Personnel Command in Washington, DC.

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Chapter 1

Installation and Setup

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System Requirements for Running EPISYS

- ✓ Any IBM®-compatible machine with a 486 processor or higher.
- ✓ 65 megabytes of free disk space.
- ✓ At least 8 megabytes of memory and a 3.5-inch floppy drive.
- ✓ MicroSoft Windows® Version 3.1 or higher.
- ✓ Analog, super-VGA compatible monitor.
- ✓ Mouse or compatible pointing device.

A laser printer is recommended to print statistical and graphical output.

Installing EPISYS From the MS-DOS Prompt

EPISYS executable modules and essential support files are on sixteen 3.5-inch floppy disks. For a complete installation all files must be placed on the hard drive according to the following directions:

> **Caution:** EPISYS will not overwrite your directories and subdirectories if you have previously installed EPISYS on your computer. You will need to delete all directories and subdirectories before reinstalling EPISYS.

1. Insert "Disk A" into your floppy drive.
2. Go to your root directory (cd C:).
3. Copy the contents of Disk A to your root directory (copy A:*.*).
4. Insert EPISYS Disk 1 into a floppy drive and type the following command at the MS-DOS prompt: **Unzip A:episys -d** (assuming you put the disk in floppy drive A:) This command will create the necessary subdirectories.

> *Note:* You will be prompted to insert the last disk of the backup set. Insert Disk 16 and press any key to continue with the installation.

5. Follow the instructions on the screen until all of the 16 disks have been loaded.
6. Exit back to Windows (exit).

Assigning a Program Group and Icon to EPISYS in Windows

To run EPISYS from Windows you must first assign a program group and icon to the executable file.

1. In Program Manager choose *New* from the File menu.

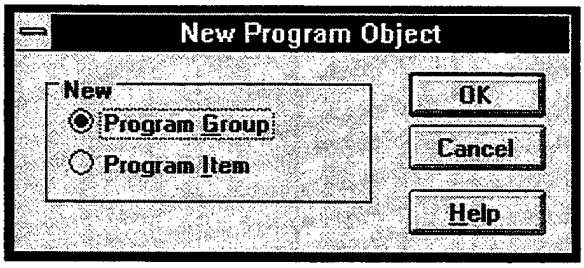


Figure 1.1 New Program Object dialog box.

❷ In the New Program Object dialog box, select the Program Group option button, and then choose the **OK** push button.

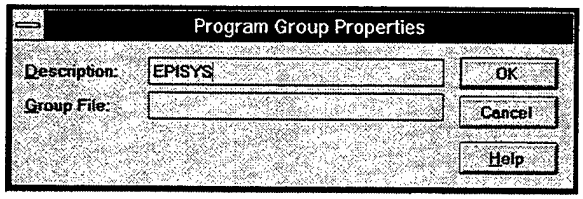


Figure 1.2 Program Group Properties dialog box.

❸ In the Description box type **EPISYS,** then choose the **OK** push button.

You will get a blank EPISYS window.

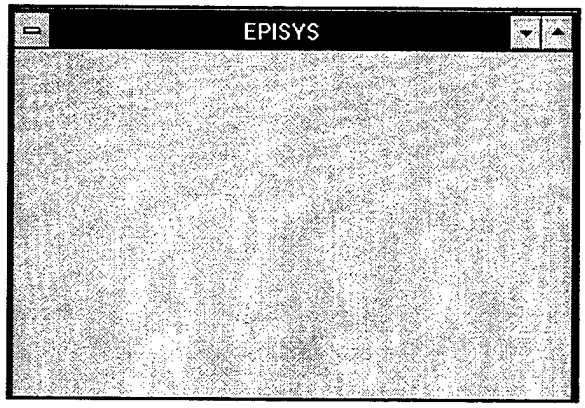


Figure 1.3 Empty EPISYS program group.

❹ Choose *New* from the File menu again. In the New Program Object dialog box, select the Program Item option button, and then choose the **OK** push button.

❺ The Program Item Properties dialog box will appear. In the Description box type **EPISYS**.

❻ In the Command box type **C:\episys\epimain.exe**

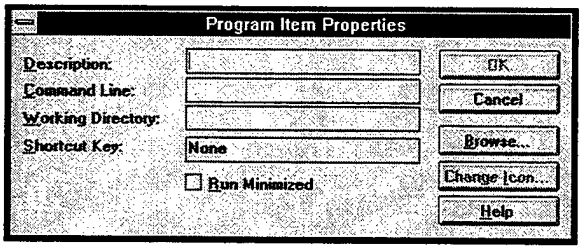


Figure 1.4 Program Item Properties dialog box.

❼ Choose the **Change Icon. . .** push button. An error message will appear informing you that no icons are available for the EPISYS. Choose the **OK** push button, which will allow you to choose an icon from the Program Manager.

❽ Scroll through the icons by clicking the scroll arrows or by pressing the **Left** and **Right** arrow keys on your keyboard. Select an icon and press the **Enter** key or choose the **OK** push button.

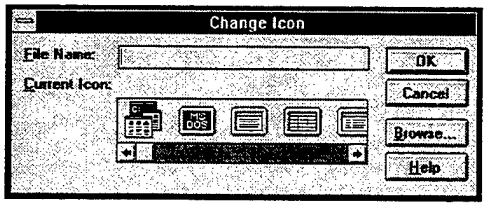


Figure 1.5 Change Icon dialog box.

This will return you to the previous dialog box.

❾ Choose the **OK** push button.

Starting EPISYS From Windows

Before you can start EPISYS from Windows you must follow the steps in the section titled, "Assigning a Program Group and Icon to EPISYS in Windows," on page 2.

❶ Double-click on the EPISYS icon.

The EPISYS main menu screen will appear:

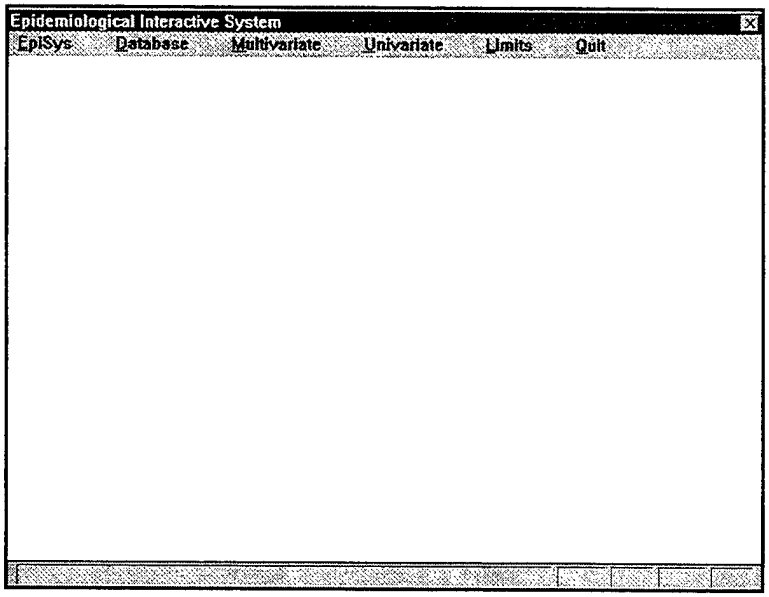


Figure 1.6 Episys main menu screen.

> *Note:* When you pull down a menu, you will notice that some commands appear in dark text while other are dimmed or grayed. You can use the commands in dark text immediately, but you cannot choose the dimmed commands until you defined the database structure and select database options. See Chapter 3, "Setting up the Analysis," to learn how to define the database and set the options.

EPISYS Setup

Before you can run an analysis, you must perform a first-time system initialization. This will initialize all EPISYS variables and tables and needs to be performed only once.

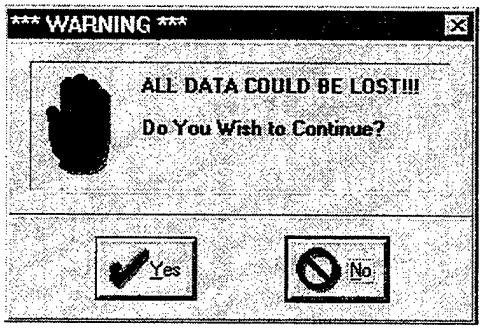


Figure 1.7 Warning screen.

❶ Choose *Initial EpiSys Preparation* from the EpiSys menu.

❷ Choose the **Yes** push button if EPISYS was newly installed or modified. This option MUST be performed before running an analysis.

❸ You will get a second warning box. Choose the **Yes** push button if you wish to continue.

A third dialog box will appear informing you that initialization is complete.

❹ Choose the **OK** push button.

> **Caution:** Choosing *EpiSys Initial Preparation* from the EpiSys menu resets EPISYS to an initial start-up state. If it is executed, some or all previous analyses might be lost.

Quitting EPISYS

You should quit EPISYS before turning off your computer.

❶ Choose *Quit* from the main menu bar.

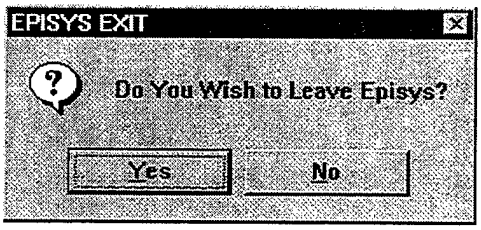


Figure 1.8 EPISYS EXIT dialog box.

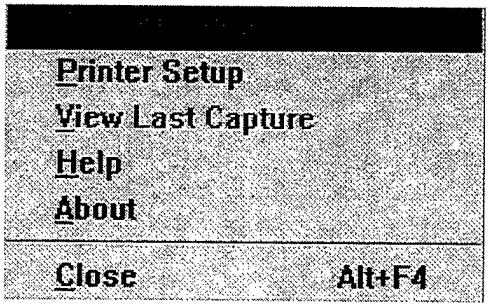
❷ Choose the **Yes** push button.

In order to avoid a message when you reopen EPISYS you must close JasCapture.

Follow the steps below:

❶ Point to the camera icon located on the bottom of your computer screen and click your right mouse button.

A pop-up menu will appear.



❷ Scroll down with your mouse or use your **Down** arrow key until the option Close is highlighted. Release your mouse button or press the **Enter** key.

Figure 1.10 JasCapture pop-up menu.

Chapter 2

EPISYS Basics

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Mouse Techniques

You will need a mouse to access EPISYS. Some operations will be accessible by both keyboard and mouse, however, most operations will only be accessible by mouse. If a function can be performed with keystrokes, it will be noted separately.

Point *Move the mouse until the mouse pointer rests on the item you want to select.*

Click *Point to an object, then press and release the left mouse button.*

Double-Click *Click the left mouse button twice in rapid succession.*

Drag *Point to an object. Hold down the left mouse button, move the mouse in the direction you want to go, and then release the button.*

Choose *Click an item from a menu or dialog box that initiates an immediate action.*

> *Note:* If you are left-handed and you have changed the settings of your mouse to left-handed options, you will need to click the right mouse button instead of the left button.

Keyboard Techniques

Selecting menus *To display pull-down menus from the main screen hold down the **Alt** key and press the mnemonic letter for the menu you want (such as **Alt**+F for the File menu).*

Selecting menu items *Use your **Up** and **Down** arrow keys until the menu item is highlighted. Press **the Enter key** to accept.*

To back out of a menu without choosing an item, press the **Esc** key.

> *Note:* Mnemonic letters are indicated by an underline, such as D for Database.

Menus

The menus in EPISYS are used sequentially from left to right and from top to bottom. EPISYS contains six menus. Menu items that are dimmed or grayed cannot be used until the submenus above it or the menus to the left of it are selected.

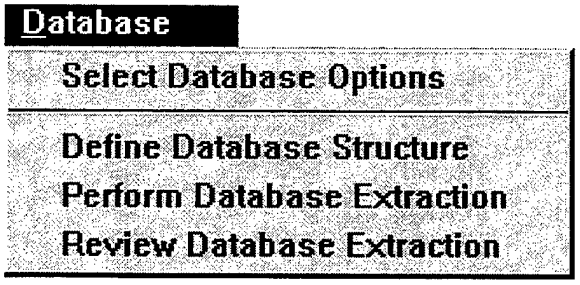

Figure 2.1 Database Menu.

EPISYS Menu Options

Similar commands are grouped under one main menu. The following defines the purpose of each of the six main menus in EPISYS.

Figure 2.3 EPISYS main menu bar.

EpiSys Displays the EPISYS logo, allows the user to delete an analysis and perform a one-time system initialization (the system should only be initialized when the system is first installed).

Database Allows you to define the Type I error, Mean deviation, and Scaling option and to select and extract variables for analysis.

Multivariate Allows you to analyze 3 or more dependent variables (illness codes) or groups of illness codes. Illness codes can be either Naval Health Research Center (NHRC) or International Classification of Diseases, 9th revision, Clinical Modification (ICD-9-CM) codes. For this option to be performed properly you must select three individual illness codes or groups of illness codes. EPISYS controls for the variable time by using month of the year as a dependent variable. EPISYS automatically factors in month of the year. Independent ancillary variables are analyzed for their effects on the dependent variables; these include sex, race, age, branch, grade, occupation, platform, and ocean region. EPISYS also allows you to determine sampling stratification and sample size allocation.

Univariate Allows you to analyze a single NHRC/ICD-9 code or a single group of illness codes. Frequencies and crude and age-adjusted rates are calculated as well as standardized incidence ratios.

Limits Produces time series graphics and written reports indicating time periods when major or minor NHRC/ICD-9 category rates exceed expected local or global confidence levels.

Quit Allows you to safely exit EPISYS.

Choosing a Menu and Menu Options

Mouse:

❶ Point to the name of the menu on the main menu bar and click the left mouse button to display the pull down menu.

❷ Drag the mouse down the list while holding the left mouse button and release when the bar highlights the option you want to select. On some menus you may simply click the menu item you want without dragging the mouse down the list.

Keyboard:

❶ Press the **Alt** key to select the first menu. Then press the **Right** or **Left** arrow keys to select other menus on the menu bar, or press the **Alt** key in conjunction with the mnemonic letter of the menu.

❷ Press the **Enter** key to display the pull-down menu.

❸ Us the **Up** or **Down** arrow keys to select an option.

❹ Press the **Enter** key to choose the option.

> *Note:* To close a menu without choosing an item, click anywhere outside the menu.

Dialog Boxes

A dialog box appears when you need to supply additional information to complete a task. You can choose the **Cancel** push button or press the **Esc** key to exit a dialog box without executing the options you selected. EPISYS uses four types of data entry inside dialog boxes: Push buttons, Text boxes, Option buttons and List boxes.

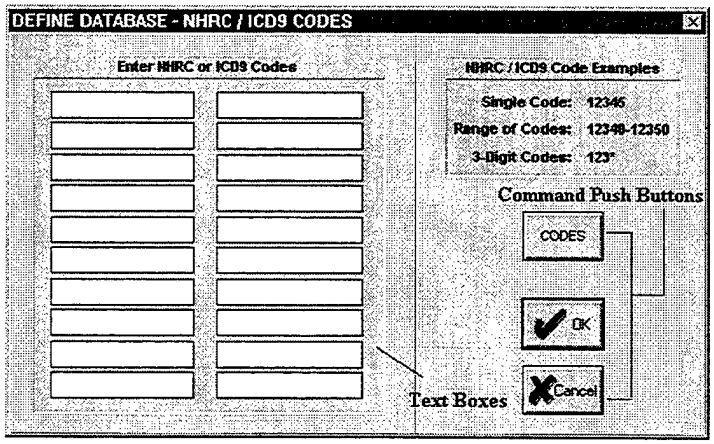

Figure 2.4 Push buttons and Text boxes.

> *Note:* If you change the options to the dialog box and decide you do not want to save them, you will need to press the **Cancel** push button to exit.

Push Buttons

Push buttons carry out or cancel a command. For example the **OK, Cancel, CODES,** and **SELECT** buttons are all examples of push buttons.

➥ To choose a push button, point with the mouse and click.

> *Note:* The currently selected push button has a border that is darker than that of other buttons. You can choose the selected button simply by pressing the **Enter** key

Text Box

Text boxes are used when your information needs to be typed in.

➥ To input information into the text box, point and click inside the text box and type in the desired text or press Tab to move to the box to the right and Shift + Tab if you want to move to a box on the left.

> *Note:* In most cases the cursor will already be positioned in the box. To located the text editing cursor, look for a vertical blinking beam. If the box you move to contains text, and the text is highlighted, any text you type will replace it. You can also delete the existing text by pressing the **Delete** key or the **Backspace** key.

Option Buttons

Option buttons represent a group of mutually exclusive options. Only one of the options can be selected. If you select a second option, your current selection will replace the former. A black dot indicates the item is selected.

➥ To select an option button point to the box and click.

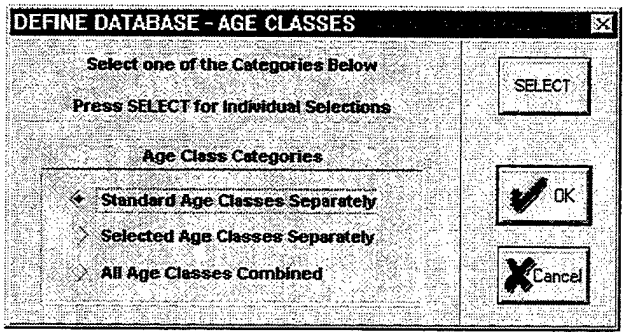

Figure 2.5 Push buttons and Option buttons.

List Boxes

A list box displays a list of choices. Often all of the items will not fit inside the window. Scroll bars are provided so you can move quickly through the list box. For help on scrolling a list see the following sections..

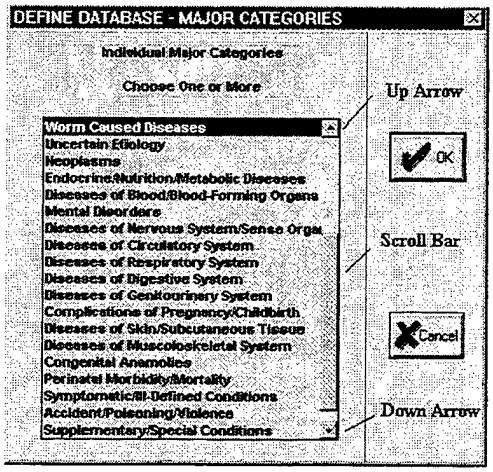

Figure 2.6 List box.

Scrolling a List and Selecting One Item

Mouse:

1. Click the **Up** or **Down** scroll keys until the item you want appears or move the scroll bar by clicking and dragging in the direction you want to go.
2. Click the item.

Keyboard:

1. Use the mouse to click on the scroll bar.
2. Press the **Up** or **Down** arrow key until the bar highlights the option you want to select.
3. Press the **Enter** key.

> *Note:* Holding down the left mouse button while dragging down the list will cause the scrolling to continue until released.

Selecting Multiple Items From a Scrolling List

1. If necessary, click the **Up** or **Down** scroll arrows until the item you want appears.
2. Select your first item by clicking the left mouse button.
3. Scroll through the list, using the arrows on the side until you find the next item.
4. Hold down the **Ctrl** key while clicking the left mouse button to select the next item.
5. Repeat until all items are selected.

Selecting a Block of Sequential Items

1. Hold down the left mouse button and drag across the block of items

Or:

1. Select the first item by clicking the left mouse button.
2. Scroll through the list, using the arrows on the side until you find the last item of the list you would like to select.
3. Hold down the **Shift** key while clicking the left mouse button. This will paint a block that starts at your first item and ends at your last item.

Canceling an Item From a Group of Selected Items

Hold down the **Ctrl** key and click the selected item to cancel.

> *Note:* Using the **Shift** key while clicking the left mouse button only works if the options you want to select are in a continuous block. If you would like to select several items that are not in a continuous block, use the **Ctrl** key while clicking the left mouse button for each selection.

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Defining the Database Options and Structure for Analysis

Once you have performed a first-time installation (see Chapter 1, Installation and Setup) you are ready to select Database Options (Type I error, Mean deviation, and Scaling option) and Define the Database Structure (select variables from the database for analysis). If you extract data without setting the database options or defining the database structure you will extract EPISYS default variables (See Appendix E for a list of EPISYS default variables) with the Type I error set at .95, mean deviation at 0.1000 and the scaling option at # per 100,000 person-years at risk. If you want to combine groups of illness codes or look at a sub-population you will need to define and extract the variables of interest and save this extraction under a file name.

Selecting Database Options

You can change the way EPISYS looks at your data by modifying the default options from the DATABASE - GLOBAL DEFINITIONS dialog box. The three database options are as follows:

Type I error — Several multi-variate analyzes use statistical tests of significance. If this option is not modified, the value .95 will be used for the significance level and confidence intervals.

Mean deviation — Determines stratified sample sizes. For instance, a value of 0.100 results in a sample size large enough to detect a 10% difference between mean incidence rates. The smaller the value, the larger the sample size.

Scaling option — When calculating incidence or prevalence rates this option allows you to change the population unit constant (k) from 10 to 100,000 person-years.

Caution: Once you have changed the default values in the DATABASE-GLOBAL DEFINITIONS dialog box the new value(s) will become the default.

Follow the steps below to change the default settings in the DATABASE - GLOBAL DEFINITIONS dialog box:

1. Choose *Define Database Options* from the Database menu.
2. To change the Type 1 error and the mean deviation click on the box and highlight the default value and type in the new value. The text you type will replace the highlighted text.
3. To change the scaling options click on the appropriate option button. Only one of the options can be selected. If you select a second option, your current selection will replace the former.

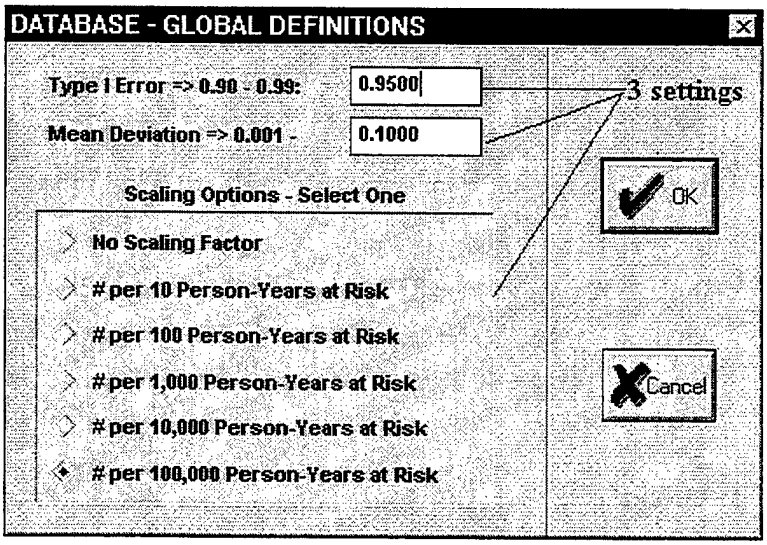

Figure 3.1 DATABASE - GLOBAL DEFINITIONS dialog box.

❹ Choose the **OK** push button to accept your changes or the **Cancel** push button if you want to keep the default settings, (Type I Error = .95, Mean deviation = .10 and Scaling option = # per 100,000 person-years at risk).

> *Note:* If you enter a value that is out of range for mean deviation and Type 1 error a warning message will appear. Click **OK** or press the **Enter** key, then enter an appropriate value. The range of appropriate values are displayed to the left of the associated text box.

Defining Database Structure

When you define the database structure, you are actually changing the default settings for one or all of the variables in EPISYS. The default setting for each variable in EPISYS is to extract all variables, and look at them separately. See the list of EPISYS variables below:

List of EPISYS Variables Found in the DATABASE-DEFINITION Dialog Box

NHRC/ICD-9 Categories

Naval Health Research Center (NHRC)[1] or ICD-9[2] illnesses codes are used to identify illnesses. For a list of Major and Minor categories see Appendix A.

All Minor Categories Separately
All Major Categories Separately
Select Individual Major Categories
Select Individual Minor categories
Select Individual NHRC Codes
Select Individual ICD9 Codes

Sex Categories

Male Female

Race Categories

White
Black
Other (Includes Filipinos, Asian and Native Americans)

Age classes

The following is a list of preset age classes. The default age classes were based on the Surveillance, Epidemiology, and End Results[3]. You can, however, define your own age classes. See the section titled Defining Age Classes on page 25.

17-19 20-21
22-24 25-29
30-35 35-39
40-44 45-61

Service Branches

United States Navy USN
United States Marine Corps USMC

Marine Corps data is not available in EPISYS version 1.0.

Pay Grades

Enlisted 1-9

Occupation Rates

Allows you to select individual occupation rate categories [4]. For example, 7800-AN Airman. See Appendix C for a list of occupational rate codes and titles.

Duty Platforms

The UIC type were the person worked prior to hospitalization. UIC's are organized by the type, e.g., Aircraft carrier, Submarine or Ashore (see Appendix D for a complete list available in EPISYS).

Ocean Regions

This is not available in EPISYS version 1.0

Inclusive Dates

Allows you to enter a date range between January 1, 1980 and December 31, 1994. The date range will included all illnesses that occurred during the time period specified.

Incidence/Prevalence

You can choose one of five options

Incidence -1st Hospitalization

EPISYS only counts the 1st hospitalization for a particular NHRC or ICD-9 illness code during the defined time period (as specified in the INCLUSIVE DATES dialog box). For example, an individual over the course of his or her Navy career could be hospitalized more than once for the same diagnosis, however, with this option selected, they would only be counted once.

Incidence - 1st Hospitalization/patient deaths

Same as "Incidence - 1st Hospitalization" with deaths included in the count.

Prevalence-All Hospitalizations

Counts all hospitalizations for a particular NHRC or ICD-9 illness code during the defined time period (as specified in the INCLUSIVE DATES dialog box). Multiple hospitalization for the same individual and for the same illness code will all be counted.

Prevalence-All Hospitalizations/patient deaths

Same as "Prevalence - All Hospitalizations" with deaths included in the count.

Inpatient deaths only

Counts deaths occurring due to the illness code(s) selected.

Opening an Existing Definition

Before you start selecting variables for analysis you will need to open an existing file or create a new file.

❶ Choose *Define Database Structure* from the Database menu.

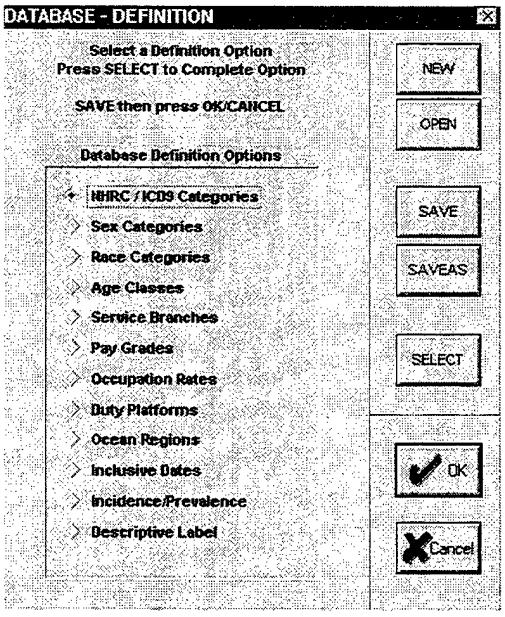

Figure 3.2 DATABASE-DEFINITION dialog box.

❷ Choose the **OPEN** push button.

❸ Select a filename by pointing to the name and clicking with your left mouse button.

❹ Choose the **OK** push button or press the **Enter** key.

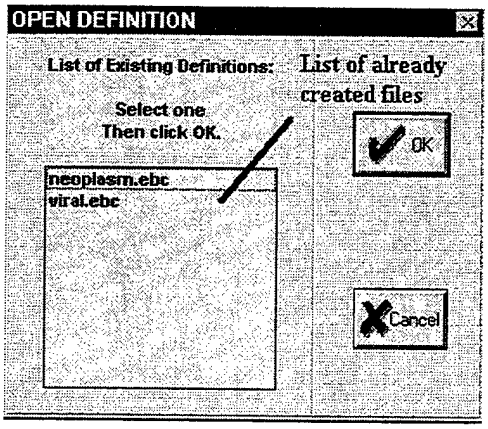

Figure 3.3 OPEN DEFINITION dialog box.

Creating a New Definition

❶ Choose *Define Database Structure* from the database menu.

❷ Choose the **NEW** push button.

❸ Type in a filename and choose the **OK** push button or press the **Enter** key.

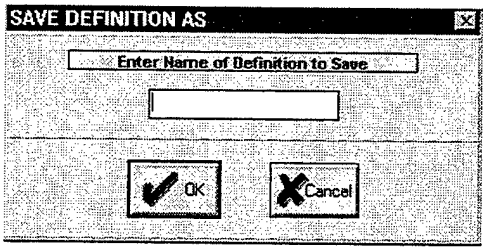

Figure 3.4 SAVE DEFINITION AS dialog box.

Note: EPYSIS will only accept eight characters for file names and automatically adds an EBC extension (EPISYS (Data)Base Control) to your eight character file name. EPYSIS will not allow you to add an extension to your file name.

See page 31 to save a new or modified definition.

Selecting Variable Options From the DATABASE-DEFINITION Dialog Box

The DATABASE- DEFINITION dialog box contains a list of 11 variables with corresponding option buttons on the left-hand side and command buttons on the right-hand side. The last option on the dialog box, "Descriptive Label" allows you to type a descriptive title into a text editing box, which will appear on all your statistical output.

When you change the options to the variables on the DATABASE-DEFINITION dialog box, you are changing the default values, which is; select major illness codes and all other variables separately. If you want to look at a sub-population, you will need to change the default settings. For example, if you only want to analyze viral diseases, broken down by males and females you will need to select major disease category "viral diseases" and change all the default settings to combined except the variable sex, which should stay at the default setting, "male and females separately."

Selecting NHRC/ICD9 Categories

You can select a particular illness or group of illnesses using NHRC or ICD-9 codes. You also have the option of selecting illnesses by their major or minor illness grouping (See Appendix A, Major and Minor illness codes). Use the International Classification of Diseases, Injuries, and Causes of Death, 9th Revision, Clinical Modification (ICD-9-CM)[2] and Appendix A as a references for making the following selections.

❶ Choose *Define Database Structure* from the Database menu.

❷ At the DATABASE-DEFINITION dialog box click on the "NHRC/ICD9 Categories." option button.

❸ Choose the **SELECT** push button

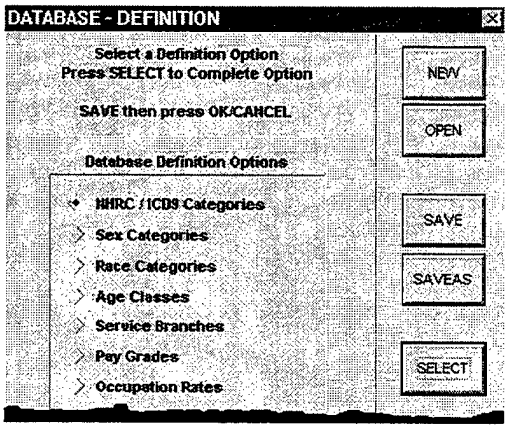

Figure 3.5 DATABASE-DEFINITION dialog box.

❹ Point to one of the six options and click.

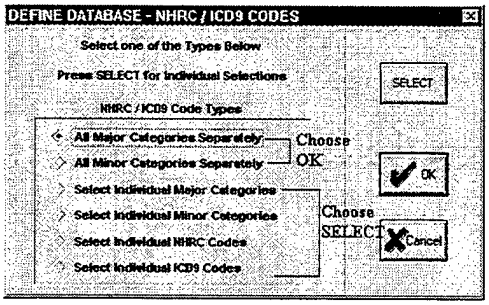

Figure 3.6 NHRC/ICD9 codes dialog box.

The following steps will differ depending on the which one of the six options you choose.

Major or Minor Categories Separately

❺ Choose the **OK** push button to accept your selection.

Individual Major or Minor Categories

❺ Choose the **SELECT** push button.

The Major or Minor dialog box will appear displaying a list of the categories, you may select one or more of the categories:

➜ Major and Minor categories are in ascending order by their numeric code. See Appendix A, Major Illness Categories Sorted Numerically by Major Illness Code for a list as it appears in the Major and Minor Categories dialog box.

Note: When you first enter the DEFINE DATABASE-MAJOR OR MINOR CATEGORIES dialog box all categories will be selected. To deselect click anywhere inside the list box.

❻ Click the **UP** or **DOWN** scroll arrows until the Major or Minor category you want appears or move the scroll bar by clicking and dragging the bar in the direction you want to go.

❼ Click the item.

❽ If you want to select more than one item from the list, press and hold down the **Ctrl** key. With the **Ctrl** key held down click on each item you want selected.

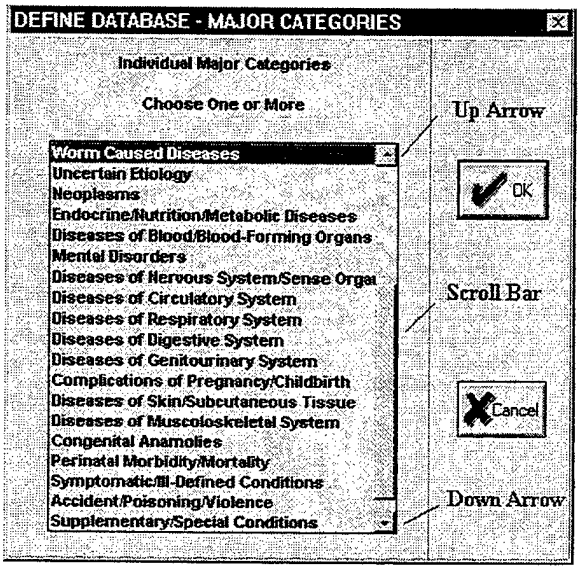

Figure 3.7 MAJOR CATEGORIES dialog box.

If you want to select a sequential list of items hold down the left mouse button and drag across the block of items. You may also select the first item by clicking the left mouse button. Scroll through your list, using the arrows on the side until you find your last selection. Hold down the **Shift** key while clicking the left mouse button. This will paint a block that starts at your first item and ends at your last item.

You may also deselect a selected item by holding down the **Ctrl** button and clicking each item you want deselected with your left mouse button.

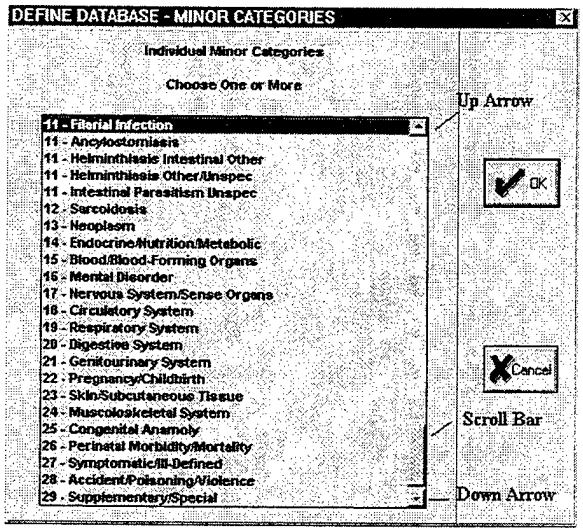

Figure 3.8 MINOR CATEGORIES dialog box.

❾ Choose the **OK** push button or press the **Enter** key.

This will return you to the DEFINE DATABASE-NHRC/ICD9 CODES dialog box.

❿ Choose the **OK** push button or press the **Enter** key.

Individual NHRC Codes or ICD9 Codes Option

❺ Choose the **SELECT** push button.

❻ Type one code or a range of codes in each text editing box. Follow the examples displayed on the top right-hand corner of the dialog box. If you do not know the codes follow the directions for looking up individual NHRC and ICD-9 codes in the section titled, "Looking up Individual NHRC and ICD-9 Codes," on page 20 or refer to Appendix B, NHRC illness codes.

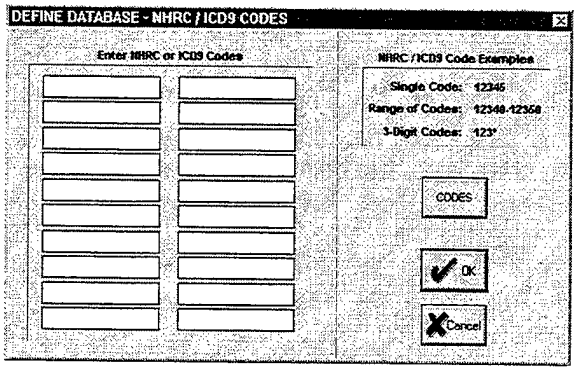

Figure 3.9 NHRC/ICD9 CODES dialog box.

Codes entered in the text editing box must be a complete 5-digit code or a 3-digit sub-code followed by an asterisk. For example, 27027 or 270*.

Caution: If you enter a three digit code with asterisk and you set the Incidence/Prevalence option to "Incidence-1st Hospitalizations only" EPISYS will extract all first time hospitalizations for the first three digits of a particular five digit series, but will exclude the cases that had multiple hospitalizations for different illness codes within that series. For example, Affective Psychosis has the NHRC series codes from 27001 to 27049. An individual could be hospitalized for Depressive Psychosis - Mild (27027) than again in later for Manic disorder Moderate (27016). By selecting the three digit code, that individual will only be counted once.

Note: A three digit code followed by an asterisk will include all codes beginning with the three digits.

Caution: NHRC and ICD-9 codes are not continuous which means the numbering system contains gaps. When entering a range of codes the first and last code entered in the text editing box must exist. Codes in between the specified range do not have to exist. EPISYS can only analyze 130 codes or less. If you enter more than 130 codes a warning will appear.

Note: If you type an inappropriate code or a text string that does not appear in the database a warning message will appear.

Looking up Individual NHRC and ICD-9 Codes

There are four code search options available from the DATABASE-CODE SEARCH dialog box.

1. Search for the equivalent NHRC or ICD-9 code(s) (page 21).
2. Search for a string of text (page 22).
3. Browse the NHRC and/or ICD-9 code database (page 23).

For example, if you know the NHRC code but want the equivalent ICD-9 code you can search by NHRC and EPISYS will enter the equivalent ICD-9 code in the appropriate box and vice versa. If you do not know the code, you can type a text string in the "Text Search String" text editing box and EPISYS will display in a Windows editor all the NHRC and ICD-9 codes containing the word or word part you typed in the text editing box; or you can browse the NHRC and ICD-9 illness code database.

Caution: Illnesses code descriptions are abridged so that they can fit on the screen. For example, illnesses containing the word tuberculosis in the description could be abbreviate TB or Tuber or tuberculosis. If you want to see all illnesses containing tuberculosis you will need to refer to the ICD-9 reference or browse the NHRC and ICD-9 illness code database. See the section titled, "Browsing the ICD-9 and NHRC Illness Code Database," on page 23.

Searching NHRC or ICD-9 Codes

To find the equivalent NHRC or ICD-9 illness code and description follow the directions below:

❶ Choose the **CODES** push button from the DEFINE DATABASE-NHRC/ICD9 CODES dialog box.

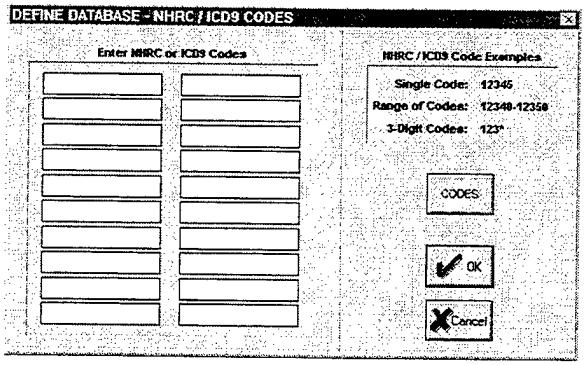

Figure 3.10 NHRC/ICD9 CODES dialog box.

❷ Click inside the NHRC Code or ICD9 Code text box and type a code.

❸ Choose the corresponding **FIND** push button.

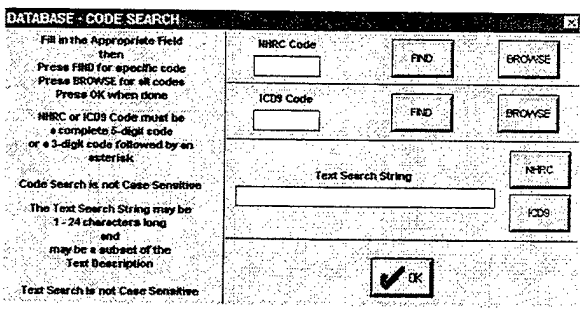

Figure 3.11 CODE SEARCH dialog box.

➜ EPISYS will display the equivalent ICD-9 or NHRC code in the corresponding text box and the illness description in the "text search string" text box.

❹ Choose the **OK** push button.

> *Note:* If you only need to enter one code into the DEFINE DATABASE - NHRC/ICD-9 CODES dialog box you can highlight the code, choose Copy from the Edit menu, Exit WnBrowse® and paste the code into the text editing box. If you need to enter more than one code you will need to write down the information or remember the information provided.

This will return you to the previous dialog box.

❺ Enter the code in the text editing box. If you do not know how to enter codes follow the direction in the section titled, "Individual NHRC and ICD-9 codes option," on page 20.

Searching a String of Text

You may want to find the NHRC or ICD-9 code for a particular illness or a range of NHRC or ICD-9 codes. You can type a string of text in the text editing box and choose the **ICD9** or **NHRC** push button to search the illness database for all occurrences of the string. To search for a string of text follow the directions below:

❶ Choose the **CODES** push button from the DEFINE DATABASE-NHRC/ICD9 CODES dialog box.

❷ Click inside the "Text Search String," text editing box. Type a text string or a range of codes (for example 270*-280* or Viral). EPISYS will only accept 24 characters in the "Text Search String" text editing box.

❸ Choose the **NHRC** or **ICD9** push button.

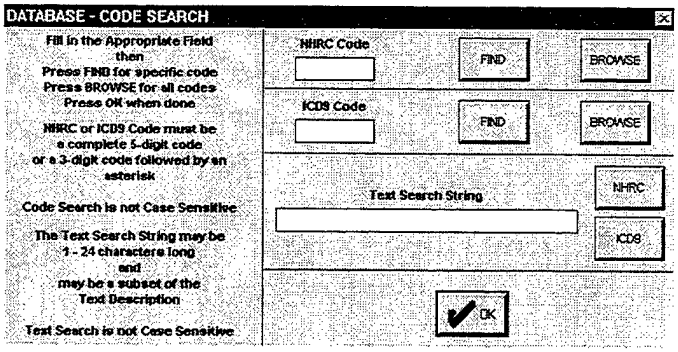

Figure 3.12 Code Search dialog box.

Your search results will appear in WnBrowse, a Windows editor.

The following numeric annotations refer to Figure 3.13.

If you push the **NHRC** push button, NHRC codes will appear in the first column. However, if you push the **ICD9** push button ICD-9 codes will appear in the first column.

❶ This is the Illness code table searched by EPISYS (either NHRC or ICD-9). In this example ICD-9 was chosen by selecting the **ICD9** push button from

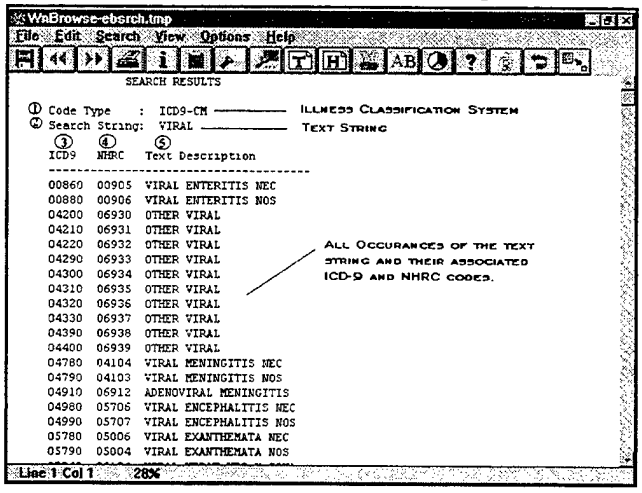

Figure 3.13 WnBrowse search results.

the Code Search dialog box. The first column displays ICD-9 codes. If the **NHRC** push button was selected, the first column would display NHRC codes.

❷ The search string typed in the *Text Search String* editing box.

❸ The code table you choose to search on (ICD-9 or NHRC) and a list of codes which contain the occurrences of the text string searched on.

❹ The equivalent illness code from the other (NHRC or ICD-9) coding system.

❺ The abbreviated illness title which refers to both columns of codes.

> *Note:* There are more NHRC codes than there are ICD-9 codes. If you see a slash -- mark in the ICD-9 column that means there is no equivalent ICD-9 code for that particular NHRC illness code.

Browsing the ICD-9 and NHRC Illness Code Database

You can view all the NHRC and ICD-9 codes by pushing the **BROWSE** push button. If you choose the **BROWSE** push button to the right of the NHRC codes text box the database will be sorted numerically by NHRC codes.

> *Note:* If you select the **BROWSE** push button to the right of the ICD-9 codes text box the database will sort numerically by ICD-9 codes. The first column of codes will always be NHRC codes and the second column of codes will always be ICD-9 codes.

See Chapter 5, "Using WnBrowse," to learn how to use WnBrowse's edit and print features.

Exiting the WnBrowse screen

❶ Choose *Exit* from the File menu.

Printing NHRC/ICD-9 Code Search Results

❶ Choose *Print* from the File menu.

The Print Options dialog box will appear with the defaults appropriately set. To learn how to change the options read Chapter 5, Using WnBrowse.

❷ Choose the **OK** push button or press the **Enter** key.

➜ Choosing Exit from the File menu will return you to the previous screen. Read the directions in the section titled, "Individual NHRC or ICD-9 codes option," on page 20, to learn how to type codes in the text editing box.

Selecting Sex Categories

You can either choose to look at males and females separately, combined, males only or females only.

❶ At the DATABASE-DEFINITION dialog box click on the "Sex Categories" option button.

❷ Choose the **SELECT** push button.

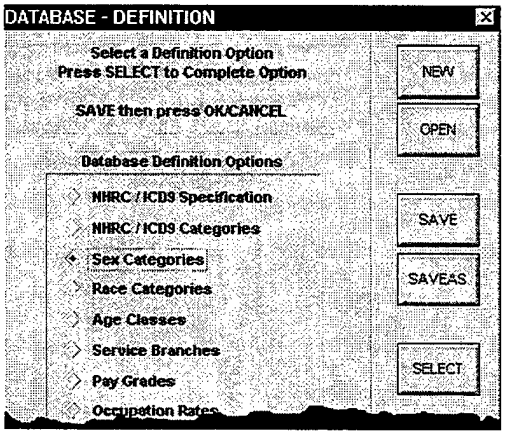

Figure 3.14 DATABASE-DEFINITION dialog box.

❸ Click one of the four options buttons.

❹ Choose the **OK** push button to accept your selection or the **Cancel** button if you want to keep the default settings, "Males and Females separately."

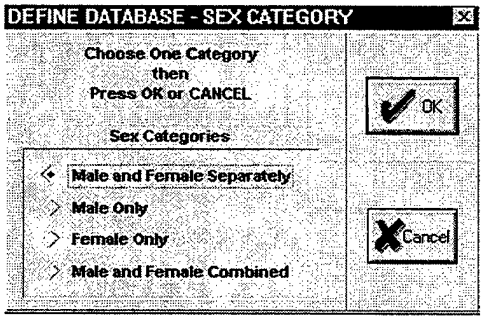

Figure 3.15 SEX CATEGORY dialog box.

Selecting Race Categories

You can either choose to look at all race categories combined or select an individual race category.

❶ Choose *Define Database Structure* from the Database menu.

❷ At the DATABASE-DEFINITION dialog box click on the "Race Categories," option button.

❸ Choose the **SELECT** push button.

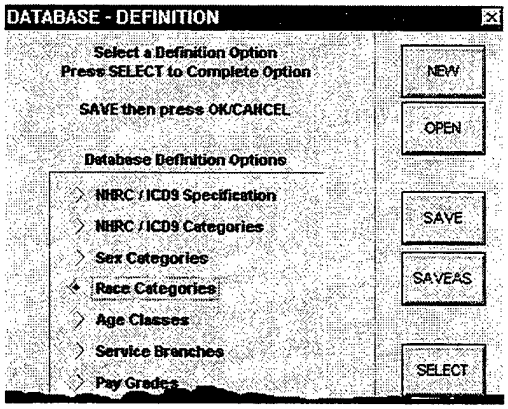

Figure 3.16 DATABASE-DEFINITION dialog box.

❹ Click one of the three options buttons.

❺ Choose the **OK** push button to accept your selection or the **Cancel** button if you want to keep the default settings, "All Race Categories Separately."

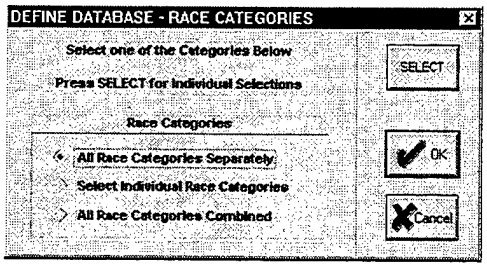

Figure 3.17 RACE CATEGORIES dialog box.

➜ If you selected the "individual race categories" option button you will need to choose the **SELECT** option button instead of the **OK** option button.

❻ Click an item. If you want to select more then one item from the list hold down the **Ctrl** key while clicking the left mouse button to select the next item

❼ Choose the **OK** push button.

This will return you to the previous dialog box.

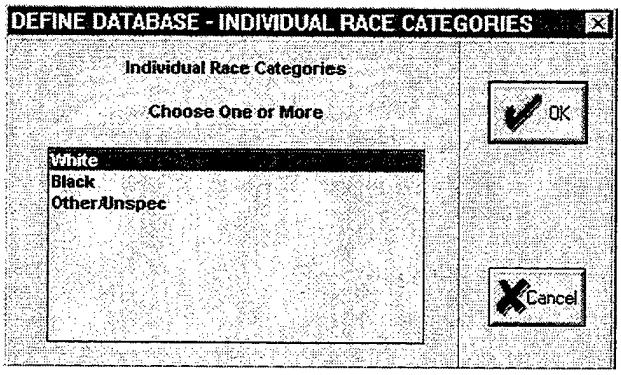

Figure 3.18 INDIVIDUAL RACE CATEGORIES dialog box.

❽ Choose the **OK** push button.

Selecting Age Classes

You can either choose from a list of preset age classes (See list of age classes below) or define your own age classes. The default age classes were based on the Surveillance, Epidemiology, and End Results[3] and were developed because of the high number of 17-24 year old enlisted in the Navy.

17-19	30-35
20-21	36-39
22-24	40-44
25-29	45-61

❶ Choose *Define Database Structure* from the Database menu.

❷ At the DATABASE-DEFINITION dialog box click on the "Age Classes" option button.

❸ Choose the **SELECT** push button.

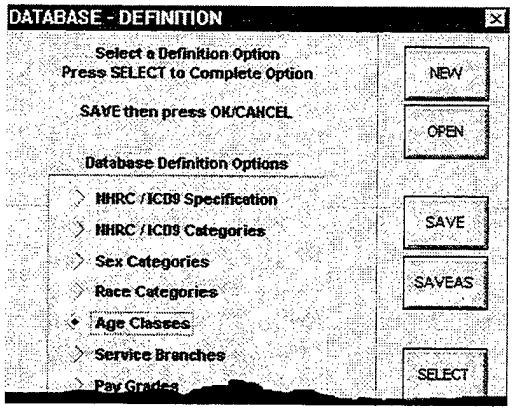

Figure 3.19 DATABASE-DEFINITION dialog box.

❹ Click one of the three options buttons.

❺ Choose the **OK** push button to accept your selection or the **Cancel** button if you want to keep the default settings, "Standard Age Classes Separately."

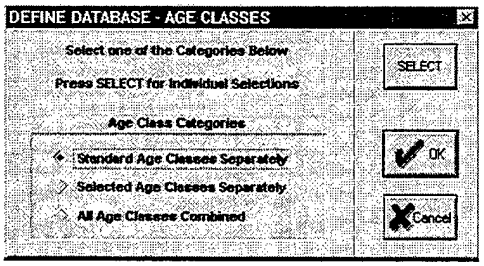

Figure 3.20 AGE CLASSES dialog box.

➜ If you selected the "Selected Age Classes Separately" option button, you will need to choose the **SELECT** push button instead of the **OK** push button. The DEFINE DATABASE-NON STANDARD AGE CLASSES dialog box will appear:

You will notice the eight default age classes are already entered in the text editing boxes.

❻ For each new age class click on the text editing box in the start column and highlight the default value. Hit the **Delete** key or type in a new value.

Note: Ignore the stop values. EPISYS will replace each with the appropriate value. You can create up to 12 age classes.

❼ Once you have entered all the starting ages in the start column choose the **SHOW** push button.

The **SHOW** push button will automatically enter the appropriate ending ages for each value in the stop column.

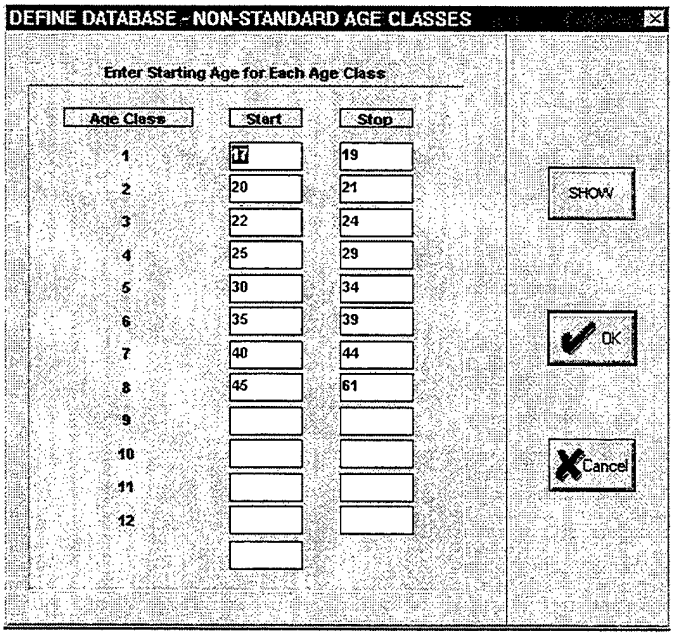

Figure 3.21 NON-STANDARD AGE CLASSES dialog box.

Caution: EPISYS uses the start value in the preceding start column to calculate the ending value in the proceeding stop column thus you must enter one more start value than needed for EPISYS to calculate the last ending value. EPISYS will delete the last entered value in the start column when you choose the **SHOW** push button.

❽ Choose the **OK** push button to accept your entries.

This will return you to the previous dialog box.

❾ Choose the **OK** push button.

Selecting Service Branches

Only US Navy enlisted is currently available

Selecting Pay Grades

❶ Choose *Define Database Structure* from the Database menu.

❷ At the DATABASE-DEFINITION dialog box click on the "Pay Grades," option button.

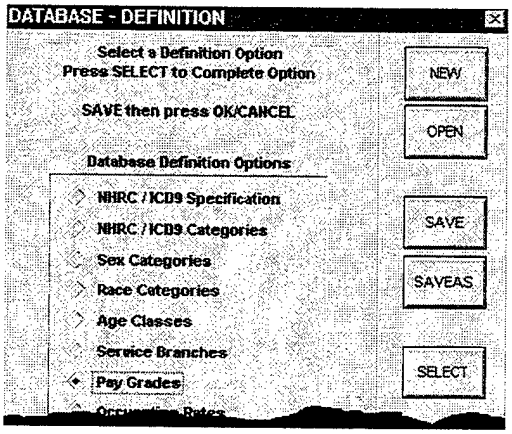

Figure 3.22 DATABASE-DEFINITION dialog box.

❸ Choose the **SELECT** push button

❹ Click one of the three options buttons.

❺ Choose the **OK** push button to accept your selection or the **Cancel** button if you want to keep the default settings, "All Grade Categories Separately."

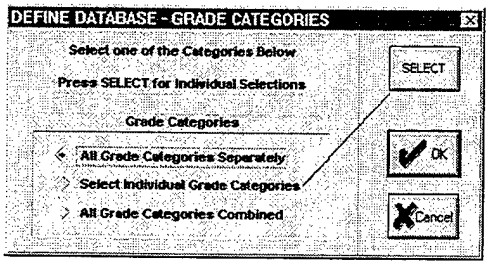

Figure 3.23 GRADE CATEGORIES dialog box.

➜ If you selected the "Individual Pay Grades" option button, you will need to choose the **SELECT** push button instead of the **OK** push button.

❻ Click an item. If you want to select more then one item from the list hold down the **Ctrl** key while clicking the left mouse button to select the next item.

❼ Choose the **OK** push button to accept your selections.

This will return you to the previous dialog box.

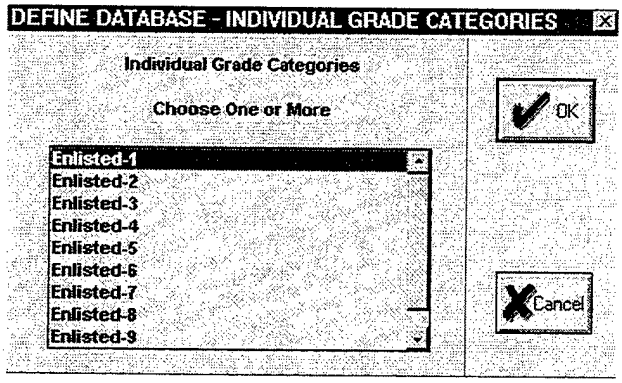

Figure 3.24 INDIVIDUAL GRADE CATEGORIES dialog box.

❽ Choose the **OK** push button.

Selecting Occupation Rates

❶ Choose *Define Database Structure* from the Database menu.

❷ At the DATABASE-DEFINITION dialog box click on the "Occupation Rate," option button.

❸ Choose the **SELECT** push button.

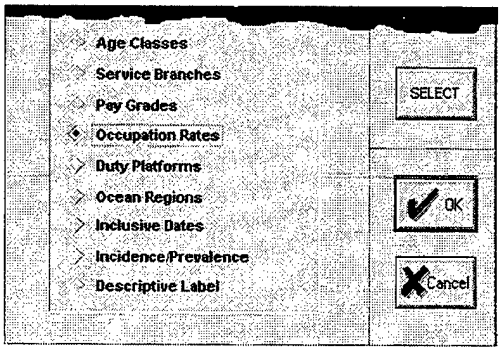

Figure 3.25 DATABASE-DEFINITION dialog box.

❹ Click one of the three options buttons.

❺ Choose the **OK** push button to accept your selection or the **Cancel** button if you want to keep the default settings, "All Rate Categories Separately."

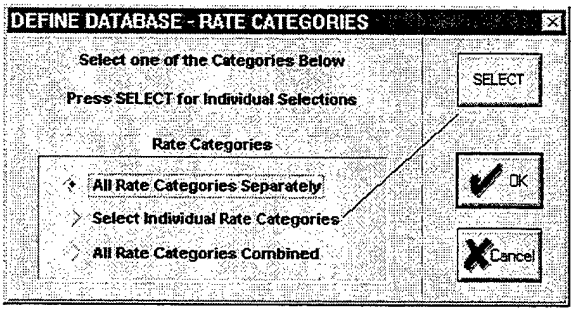

Figure 3.26 RATE CATEGORIES dialog box.

➜ If you selected the "individual rate categories" option button you will need to choose the **SELECT** push button instead of the **OK** push button.

> *Note:* Occupation rates are sorted by their code and arranged in ascending order. Use Appendix C as a reference for selecting individual occupations. Appendix C lists occupation rates by either rate code or occupation title.

❻ Click an item. If you want to select more then one item from the list hold down the **Ctrl** key while clicking the left mouse button to select the next item

❼ Choose the **OK** push button.

This will return you the previous dialog box.

❽ Choose the **OK** push button.

Selecting Duty Platforms

❶ Choose *Define Database Structure* from the Database menu.

❷ At the DATABASE-DEFINITION dialog box click on the "Duty Platforms" option button.

❸ Choose the **SELECT** push button.

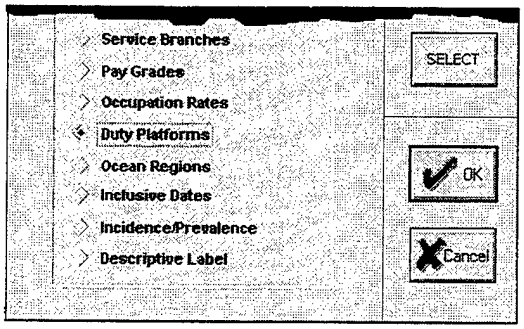

Figure 3.26 DATABASE-DEFINITION dialog box.

❹ Click one of the three options buttons.

❺ Choose the **OK** push button to accept your selection or the **Cancel** button if you want to keep the default settings, "All Platform Categories Separately."

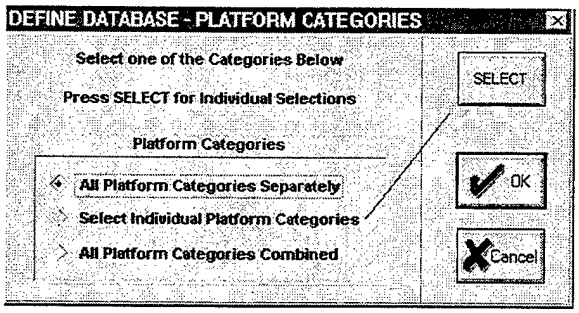

Figure 3.27 PLATFORM CATEGORIES dialog box.

➜ If you selected the "individual platform categories" option button you will need to choose the **SELECT** push button instead of the **OK** option button.

❻ Click an item. If you want to select more then one item from the list hold down the **Ctrl** key while clicking the left mouse button to select the next item

❼ Choose the **OK** push button.

This will return you the previous dialog box.

❽ Choose the **OK** push button.

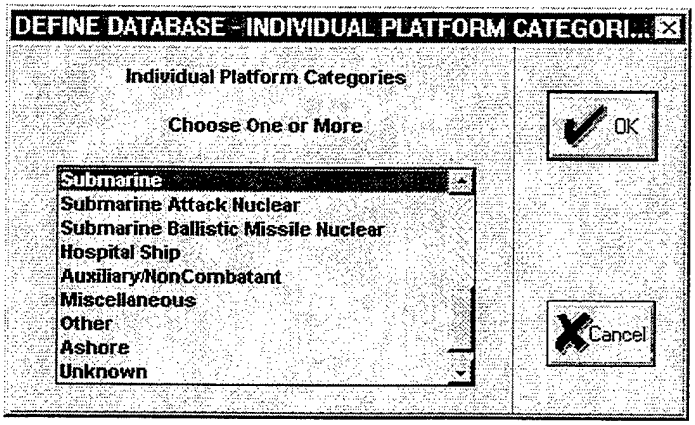

Figure 3.28 INDIVIDUAL PLATFORM CATEGORIES dialog box.

Selecting Ocean Regions

Only the default, "All Ocean Categories Combined," is currently available.

Selecting Inclusive Dates

❶ Choose *Define Database Structure* from the Database menu.

❷ At the DATABASE-DEFINITION dialog box click on the "Inclusive Dates," option button.

❸ Choose the **SELECT** push button.

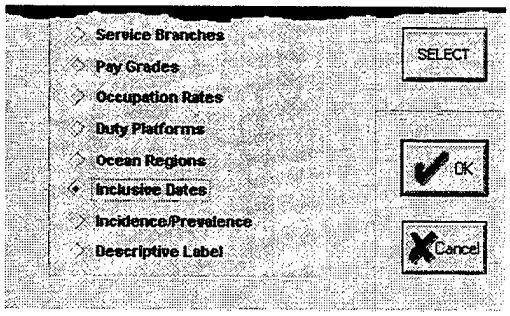

Figure 3.29 DATABASE-DEFINITION dialog box.

The Inclusive dates dialog box will appear with the default dates enter in the text box. You may enter dates which fall in this time range. A warning message will appear if you enter a date that does not fall in the default time period, January 01, 1980 to December 12, 1994.

❹ To change the beginning and ending dates click on the text box and highlight the default value. Hit the **Delete** key or type in the new date. Dates should be entered in the following format: **DAY, MONTH, YEAR** (DD-MM-YY). EPISYS will automatically insert separators between the day and month.

❺ Choose the **OK** push button to accept your entries or the **Cancel** button if you want to keep the default settings, "01-01-80 to 31-12-94."

Selecting Incidence/Prevalence

❶ Choose *Define Database Structure* from the Database menu.

❷ At the DATABASE-DEFINITION dialog box click on the "Incidence/prevalence," option button.

❸ Choose the **SELECT** push button.

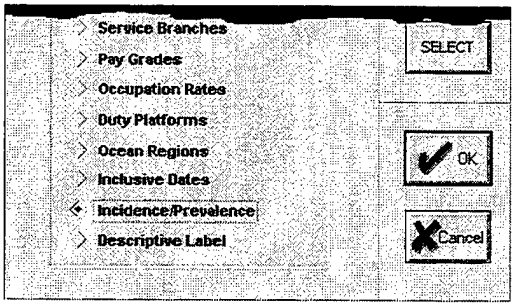

Figure 3.30 DATABASE-DEFINITION dialog box.

❹ Choose one of the five options. See page 16 for Incidence/Prevalence definitions before making your selection.

❺ Choose the **OK** push button to accept

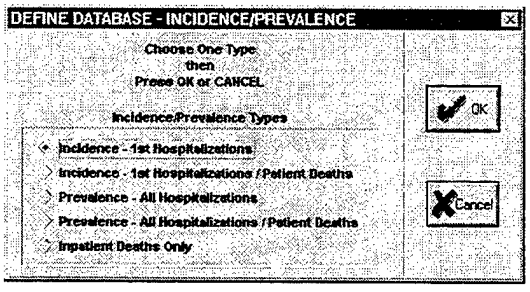

Figure 3.31 INCIDENCE/PREVALENCE dialog box.

your selection or the **Cancel** button if you want to keep the default settings, "Incidence-1st Hospitalizations."

Adding a Descriptive Label to Statistical Output

❶ Choose *Define Database Structure* from the Database menu.

❷ At the DATABASE-DEFINITION dialog box click on the "Descriptive label," option button.

❸ Choose the **SELECT** push button.

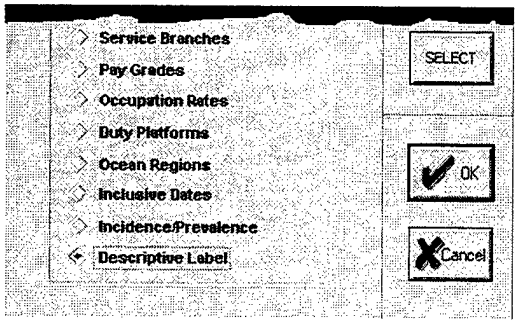

Figure 3.32 DATABASE-DEFINITION dialog box.

❹ Type up to 50 characters in the text editing box. The text will appear on all your statistical output for this particular definition.

❺ Choose the **OK** push button to accept your entry.

Saving Definitions

The DATABASE-DEFINITION dialog box contains two commands for saving. Save and Save As. You use the Save command to save changes to an existing definition. You use the Save As command to name and save a new definition or to save an existing definition under a new name. For example, you may want to make changes to a definition, yet also keep the original definition without the changes. By using the Save As command, you can save a copy of the original file with a different name.

Save As

❶ From the DATABASE-DEFINITION dialog box after you have opened a new file. Choose the **SAVEAS** push button.

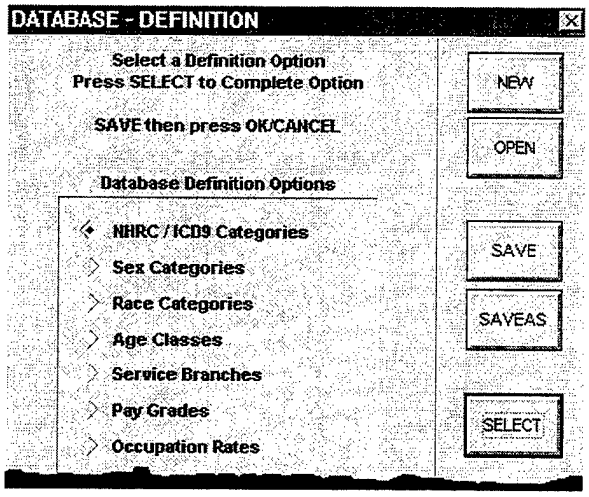

Figure 3.33 DATABASE-DEFINITION dialog box.

❷ Type an eight-character file name in the text editing box.

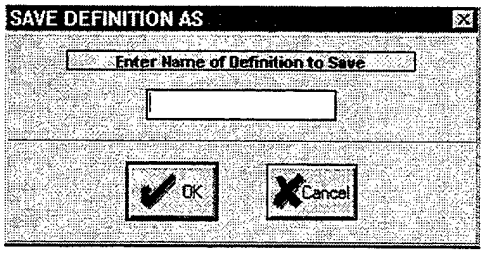

Figure 3.34 SAVE DEFINITION AS dialog box.

> *Note:* EPYSIS will only accept eight characters for file names and automatically adds an EBC extension (EPISYS (Data)Base Control) to your eight character file name. EPISYS does not allow you to type an extension for your eight character file name.

❸ Choose the **OK** push button.

Save

❶ Choose the **SAVE** push button from the DATABASE-DEFINITION dialog box.

> *Note:* A warning will appear if you did not save your definition before exiting the DATABASE DEFINITION dialog box. Choose the **NO** push button to return to the DATABASE DEFINITION dialog box and save your definition before exiting.

Deleting a Definition

❶ Choose *Delete Episys Analysis* from the EpiSys menu.

❷ Select a filename by pointing to the name and clicking with your left mouse button.

❸ Choose the **DELETE** push button.

A warning box will appear.

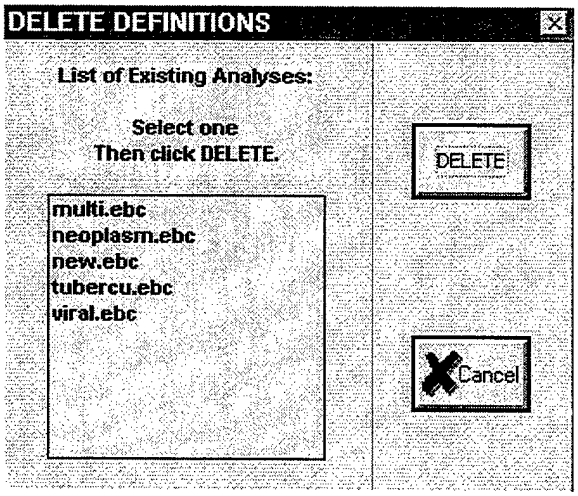

Figure 3.35 DELETE DEFINITIONS dialog box.

❹ Choose the **Yes** push button to delete the analysis or the **No** push button to abort the action.

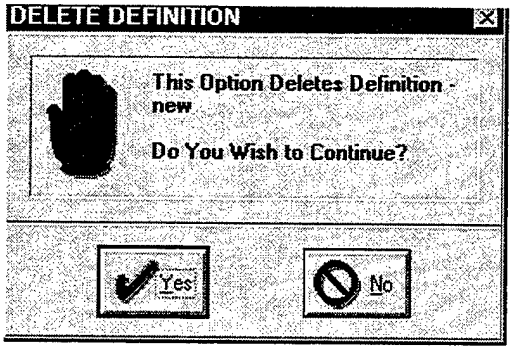

Figure 3.36 DELETE DEFINITION warning box.

This will return you to the DELETE DEFINITIONS dialog box. Choose the **Cancel** push button when you are finished deleting definitions.

Chapter 4

Viewing the Results

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Database Extraction

Before you can view your results and after you have defined the database (See Chapter 3, Setting up the Analysis) you need to perform a database extraction. A database extraction will extract the variables meeting the incidence/prevalence criteria and occurring within the inclusive dates selected by you from the DATABASE-DEFINITION dialog box. If the dates and incidence/prevalence option were not modified then the default dates (January 1, 1980 to December 31, 1994) and incidence option (Incidence - 1st Hospitalizations only) is used.

❶ Choose *Perform Database Extraction* from the Database menu.

❷ Select a filename by pointing to the name and clicking with your left mouse button.

A warning will appear if you have previously performed a database extraction on the filename selected. Choose Yes to continue, No to abort.

❸ Choose the **OK** push button.

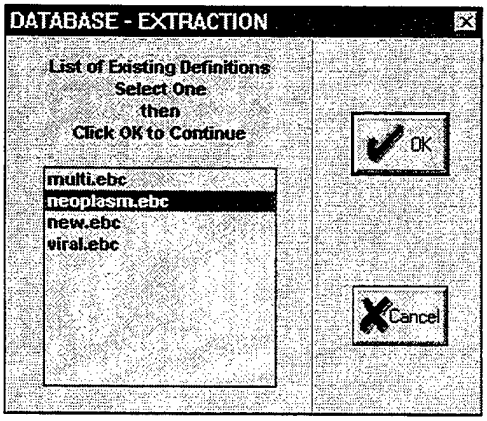


Figure 4.1 Database Extraction dialog box.

It will take several minutes to extract the database. A dialog box will appear with a status bar and the percent of extraction completed. Wait until the dialog box disappears before attempting to review the database extraction.

Reviewing Database Extraction

Before you perform a multi-variate or univariate analysis, you should review your data to verify your selections.

❶ Choose *Review Database Extraction* from the Database menu.

❷ Select a filename by pointing to the name and clicking with your left mouse button. If the filename you want does not appear you will need to perform a database extraction, see the previous section titled, "Database Extraction."

❸ Select an analysis option; Text Report, Spectral Density Analysis or Time series Analysis by pointing to the option button and clicking with your left mouse button. See explanation of options starting on page 36.

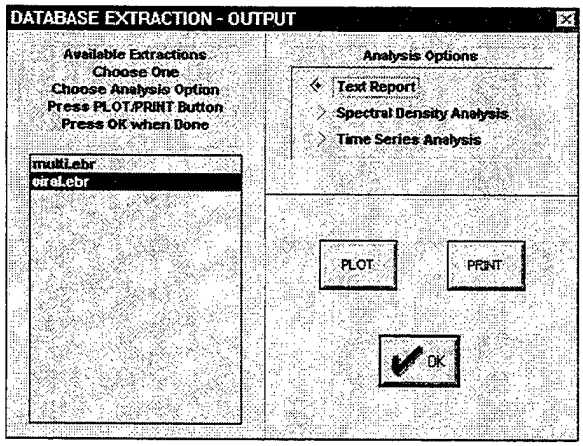


Figure 4.2 Database Extraction Output dialog box.

❹ Choose the **PLOT** push button if you want to view the results in color and choose the **PRINT** push button if you want to view your results in black and white.

> *Note:* There is no difference between the **PLOT** and **PRINT** push button if you choose the Text Report option.

> *Note:* If you select Spectral Density you will be asked to enter start and stop limit values. The start value can be two or higher and the stop value can be any value. You should only be concerned with the stop value if you do not see the line flatten out, which means you have not observed all the peaks in your data set. You should change the stop value to a higher value until you see the tail flatten.

The results will display in a Windows editor.

❺ To return to the DATABASE EXTRACTION-OUTPUT dialog box choose Exit from the File menu when viewing the Text Report option and the Done menu when viewing the Spectral Density and Time Series Analysis. If you would like to print, read the sections titled, "Printing Text Reports," on page 37 and "Printing Spectral Density and Time Series," on page 39.

❻ When you are finished viewing the extraction options, choose the **OK** push button.

Extraction Options

There are three extraction options, Text Report, Spectral Density Analysis and Time Series Analysis. The information displayed in all three extraction options is specific to the inclusive dates selected by you in the DEFINE DATABASE - INCLUSIVE DATES dialog box and the incidence/prevalence option selected by you in the DEFINE DATABASE - INCIDENCE/PREVALENCE dialog box. If the dates and incidence/prevalence option were not modified then the default dates (January 1, 1980 to December 31, 1994) and incidence option (Incidence - 1st Hospitalizations only) will be used. Only the cases which meet the incidence/prevalence criteria and occurred during the time period are counted.

Text Report

All text reports list the variables and their breakdowns with the number of cases and total number per person-years expressed in scientific notation.

The following numeric annotations refer to Figure 4.3

① **Incidence/Prevalence:** the Incidence/Prevalence option is selected by you in the DEFINE DATABASE - INCIDENCE/ PREVALENCE dialog box. If the option was

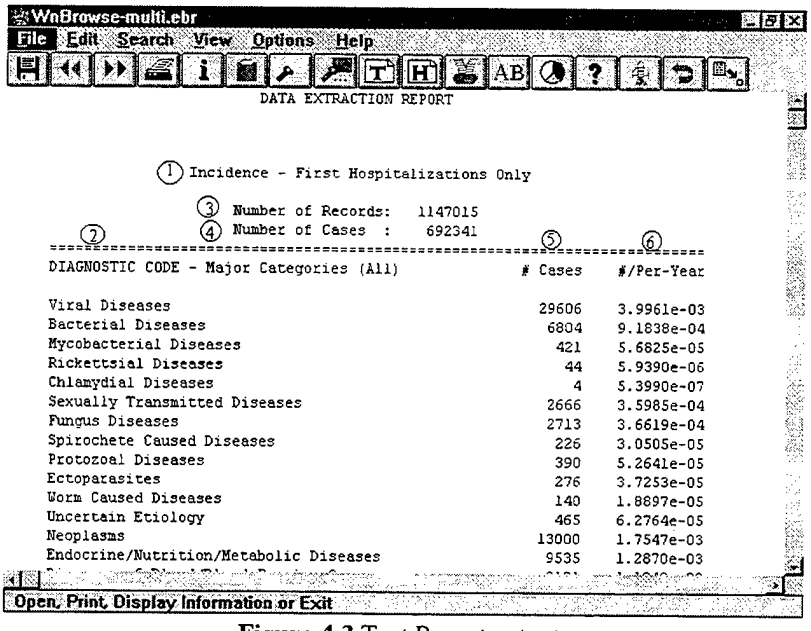


Figure 4.3 Text Report output.

not modified, the default option (Incidence-1st hospitalizations only) is used. In Figure 4.3 "Incidence-1st hospitalizations only" was selected, therefore case counts will only include the first hospitalization for a particular NHRC or ICD-9 illness code (See page 16 for a list of Incidence/Prevalence options and their definitions)

② **Variable Breakdowns:** a list of the variables and their breakdowns selected by you in the database definition dialog box.

③ **Number of Records:** a count of **all** the records currently in the database during the defined time period (includes multiple hospitalizations).

④ **Number of Cases:** a count of all occurrences meeting the Incidence/Prevalence criteria. In Figure 4.3 case counts are only those cases which meet the Incidence-1st hospitalization only criteria. You will notice the number of cases is lower than the number of records. The counts differ because *Number of Cases* dose not include multiple hospitalizations for the same illness. If you choose Prevalence (counts all cases including multiple hospitalizations) then number of records and cases should be equal when the category *All Major Categories* is selected.

⑤ **Cases:** a count of all cases meeting the Incidence/Prevalence criteria. In Figure 4.3 the counts would only include first hospitalization for a given illness.

⑥ **#/Per-year:**
The number of cases per person-year for a particular illness.

The number of cases divided by the entire EPISYS population denominator file (≈ 7.4 million). The entire population file counts an individual for each year of service within the inclusive dates. For example, if a person worked four years they would contribute four person-years to the total person years at risk
In Figure 4.3 Viral Diseases would be calculated as follows:

(29606) / (≈ 7.4 million) =

.0039961 or 3.9961e-03

> *Note:* If you received unexpected results and/or variable breakdowns try redefining the definition from the DATABASE DEFINITION dialog box again, see Chapter 3, Setting up your Analysis.

Printing the Text Report

When viewing the Text Report on the screen . . .

❶ Choose *Print* from the File menu.

The Print Options dialog box will appear with the defaults appropriately set. To learn how to change the default options, read Chapter 5, Using WnBrowse.

❷ Choose the **OK** push button.

Spectral Density Analysis

Shows the sampling cycle of your data. For example, in Figure 4.4 the data peaks on the 7th day. The data, therefore, has a prominent seven day cycle. To sample this data correctly you must select a time period no less than seven days.

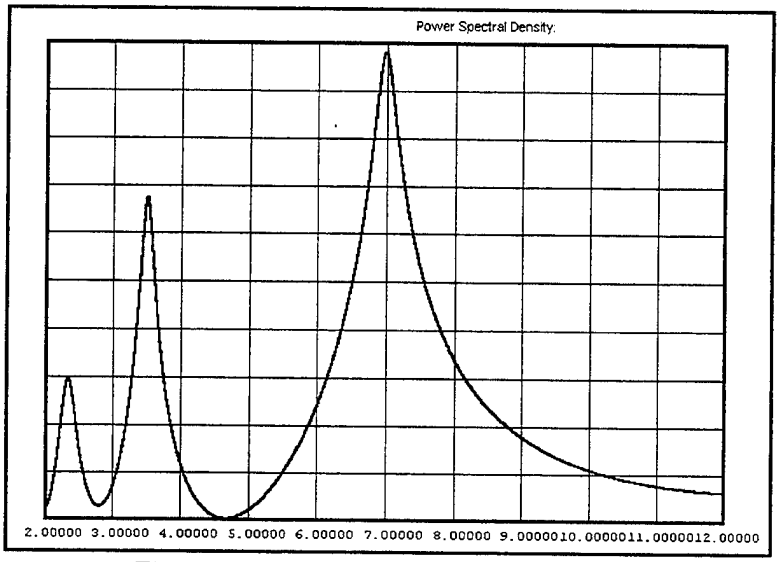


Figure 4.4 Spectral Density Extraction Output.

Time Series Analysis.

Shows the annual and historical trend of your data. The green shading (light gray) is the annual illness trend. The annual trend is calculated using a three-year moving average. The brown shading (dark gray) is the historical illness trend which takes in to account all the years of data selected by you in the DATABASE-DEFINITION dialog box. The default is January 1, 1980 to December 31, 1994. The black line represents the data points in your data set. The legend displayed on top, Local, Global or Both are indicators of data which falls outside the annual or historical trends.

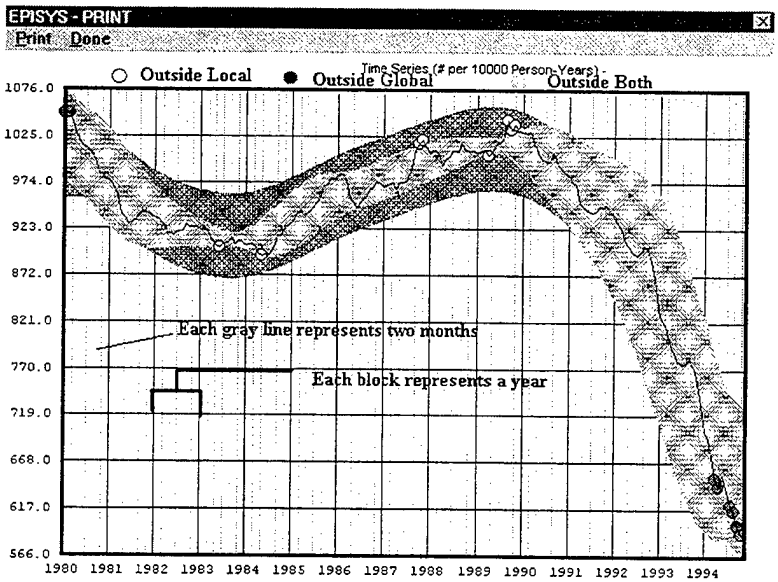


Figure 4.5 Time Series Extraction Output.

"Both" is an indication that your data falls outside historical and annual trends. An "epidemic" occurs when data falls outside the historical and annual trends. The numbers on the Y axis are rates per person-years. You can select the number of person-years at risk in the DATABASE-GLOBAL DEFINITIONS dialog box, see Chapter 3, Setting up the Analysis, or except the default which is 100, 000 person-years at risk. The X axis is the variable time. A light gray vertical line represents two months and each vertical block represents a year.

Caution: For the time series graph to produce accurate results three years of data or more must be used in order for EPISYS to calculate a three-year moving average for the annual trend (green or light gray shading).

Printing Time Series and Spectral Density Analysis

❶ Select the Spectral Density Analysis or Time series analysis option from the DATABASE EXTRACTION - OUTPUT dialog box.

❷ Choose the **PRINT** Push button.

The graph will display in black and white.

❸ Choose *Print* from the Print menu.

Note: If you are viewing a color graph you will not be able to print, however, you can capture the image using a capture program provided with EPISYS, see the section titled, "Creating a Graphic File for your Color Graph," on page 39.

The Print dialog box will appear.

❹ Choose the **SETUP** push button.

❺ Choose the Landscape option button located in the lower left corner of the Print Setup dialog box. In order for your graph to fit on an 8 ½ by 11 page of paper it must be set at landscape orientation.

❻ Choose the **OK** push button.

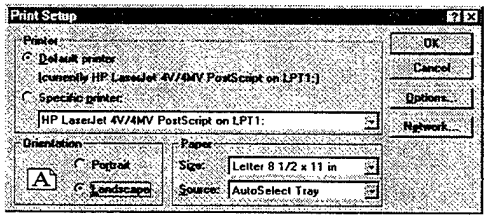


Figure 4.6 Print Setup dialog box.

This will return you to the previous dialog box.

❼ Choose the **OK** push button.

Creating a Graphic File for a Color Graph

You can save your color graph output as a PCX file to print or display in another program.

When viewing the color graph on a computer screen . . .

❶ Press down the **Ctrl** key and the **F5** key simultaneously.

You well get a cross "+" on your computer screen

❷ Drag the "+" with your mouse over the area you want to capture.

❸ Release the mouse button.

The Save As dialog box will appear.

❹ In the **File name:** text editing box type a file name

The default extension .PCX will be added to your file name unless you type a different extension.

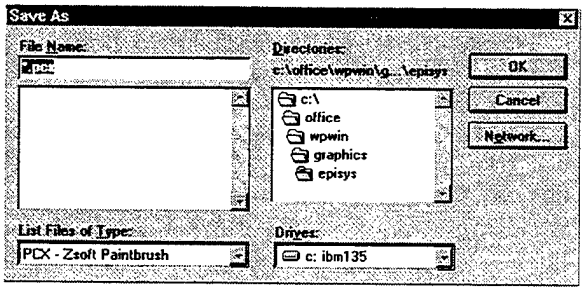


Figure 4.7 Save As dialog box.

❹ In the **Directories**: list box, choose the directory in which you want to save the file (Double-click the directory.) The default directory is C:episys.

❺ If you want to save the file on a different drive, select the drive you want from the **Drives:** list box. Click the arrow on the right hand-side of the list box to display the drives. Drag your mouse to highlight the drive letter and release.

❻ Choose the **OK** push button.

Univariate Analysis

Before you perform a univariate analysis you need to extract the database. See the section titled, "Database Extraction," on page, 35.

You only need to select one dependent variable (illness code) to perform a univariate analysis.

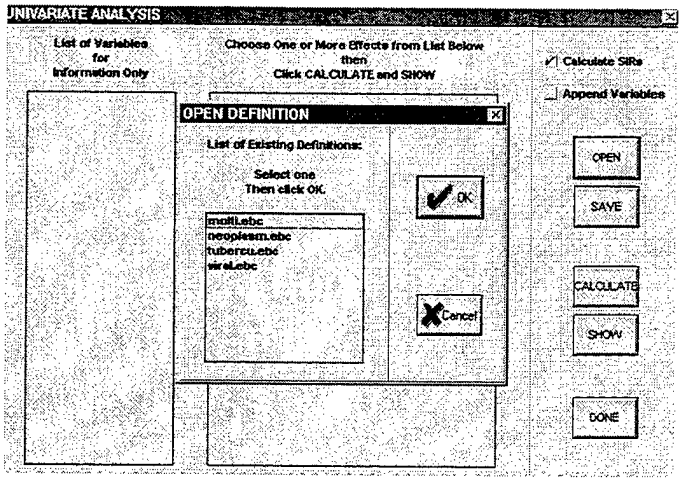


Figure 4.8 Univariate Analysis dialog box.

❶ Choose *Perform Univariate Analysis* from the Univariate menu.

❷ Choose the **OPEN** push button.

❸ Select a filename by pointing to the name and clicking with your left mouse button.

❹ Choose the **OK** push button.

It will take several minutes to load the database. After the database is loaded, a list of the variables you selected will be displayed on the left hand side of the screen along with all 1, 2 or 3-way analysis. To view the entire screen use the up and down scroll arrows located on the right-hand side of the list box.

❺ Select a univariate analysis (for example, Sex by Age) by clicking with your left mouse button.

> *Note:* If you want a list of variable breakdowns to be included on the univariate output, click the **Append Variables** option box in located the upper right-hand corner of the dialog box. The **Calculate SIRs** option box will provide Standard Incidence Ratios (SIRs) for age classes. SIRs use the total US Navy enlisted population to adjust for the effect of age on illnesses. This option will be selected by default. The univariate analysis must include the variable age in order to calculate SIR's.

❻ Choose the **CALCULATE** push button to perform a univariate analysis on your variable selection.

It will take several minutes to calculate, wait until the dialog box disappears before proceeding.

❼ Choose the **SHOW** push button to view the results in the WnBrowse editor.

Univariate Results

The following numeric annotations refer to Table 4.1 on page 43.

The following example provides Standardized Incidence Ratios (SIR) for age. These results will only appear if you check the Calculate SIR option on the Univariate Analysis dialog box and you select age as one of your variables.

① The Univariate variable(s) you selected in the Univariate Analysis dialog box. In this example a 2-way Univariate analysis was selected with Race and Age as the variables.

② **Cases per 10000 Person-years at Risk**. You can modify the population unit constant (k) from no scaling factor to 100,000 person-years at risk in the Database -Global Definitions dialog box. The default value is 100,000 person-years at risk.

③ **Confidence level** This option can be modified in the Database-global definitions dialog box by setting the Type I error from .90 to .99. The default is .95.

④ **No of Cases** A count of all occurrences meeting the Incidence/Prevalence criteria. In Table 4.1 the Incidence/Prevalence criteria is 1st hospitalizations only, therefore number of cases would only count the 1st hospitalizations for each illness and excluded multiple hospitalizations from the count.

⑤ **Per-Yrs at Risk** Counts the number of years each case (person) contributes to the total. For example, if a person worked 4 years they would contribute 4 person years to the total person years at risk.

⑥ **Incidence Rate** The number of cases (1st hospitalizations) per the (k) scaling factor by illness, age group, and race. In Table 4.1 the rate would be the number of cases per 10,000 (Refer to Appendix F for a detailed description on how EPISYS calculates incidence rates).

In the example, the incidence rate for white 17-19 year olds was 91.05 per 10,000 person years at risk calculated as follows

④/⑤ (②) = ⑥

6183/679079 (10000) = 91.05

⑦ **Confidence Limits** The confidence limits (upper and lower) tells you the range within which

the true incidence rate (⑥) is likely to fall. In the example shown, the 95% confidence level (③) for white enlisted between the ages 17-19 is 88.78 to 93.32 per 10000 person-years at risk.

⑧ **Totl pop inc rate** The Incidence rate for all U.S. Navy enlisted personnel (all races) for the selected illness(s), time period and age group.

⑨ **Expected No Cases** This is the number of expected cases and is calculated by taking the total age-specific rate (⑧) and multiplying the age-specific person-years at risk (⑤).

⑩ **Standardized Incidence Ratio (SIR)** is the observed number of cases divided by the expected. An SIR of 1.0 indicates no difference between observed and expected i.e. no excess risk. An SIR of 3.0 indicates a three times greater incidence than expected

In the example, the standardized incidence ratio for **All age groups** among black enlisted personnel was 1.44 or 44% higher than the total Navy's enlisted population after taking into account the effect of age (Refer to Appendix F for a detailed description on how EPISYS calculates standardized incidence ratio's).

Table 4.1 2-way Univariate Output as Displayed in WnBrowse

Time period: (January 1, 1980 to December 31, 1994)
Incidence/Prevalence criteria: 1st hospitalizations only
Illness codes: All Major categories Separately

UNIVARIATE EFFECTS SUMMARY: Race-Age①

Cases per 10000 Person-Years at Risk②

Confidence Level: 95.00%③

					⑦ Confidence Limits		Age Adjustment		Standardized Rates	Confidence Limits	
		④ No of Cases	⑤ Per-Yrs at Risk	⑥ Incidence Rate	Lower	Upper	⑧ Totl pop inc rate	⑨ Expected No Cases	⑩ Incidence Ratio	Lower	Upper
White	17-19	6183	679079	91.05	88.78	93.32	97.05	6590.40	0.938	0.920	0.956
	20-21	6373	1121573	56.82	55.43	58.22	59.37	6659.15	0.957	0.939	0.976
	22-24	6154	1275780	48.24	47.03	49.44	52.83	6740.54	0.913	0.896	0.930
	25-29	5154	1203944	42.81	41.64	43.98	49.55	5965.93	0.864	0.847	0.881
	30-34	2337	751739	31.09	29.83	32.35	36.49	2742.96	0.852	0.828	0.876
	35-39	1158	511738	22.63	21.32	23.93	25.86	1323.41	0.875	0.839	0.911
	40-44	345	196802	17.53	15.68	19.38	19.51	383.98	0.898	0.832	0.965
	45-61	126	61609	20.45	16.88	24.02	18.81	115.92	1.087	0.936	1.238
	Total	27830	5802264	47.96	47.40	48.53	52.23	30305.46	0.918	0.910	0.926
Black	17-19	1712	134264	127.51	121.47	133.55	97.05	1303.02	1.314	1.302	1.325
	20-21	1512	225101	67.17	63.78	70.55	59.37	1336.50	1.131	1.122	1.141
	22-24	1808	262565	68.86	65.68	72.03	52.83	1387.25	1.303	1.292	1.315
	25-29	2005	263799	76.00	72.68	79.33	49.55	1307.21	1.534	1.520	1.548
	30-34	933	139697	66.79	62.50	71.07	36.49	509.73	1.830	1.808	1.853
	35-39	375	68261	54.94	49.37	60.49	25.86	176.53	2.124	2.092	2.157
	40-44	92	21848	42.11	33.50	50.69	19.51	42.63	2.158	2.105	2.212
	45-61	6	5569	10.77	2.25	19.25	18.81	10.48	0.573	0.549	0.596
	Total	8443	1121104	75.31	73.70	76.92	52.23	5855.57	1.442	1.436	1.447
Other	17-19	263	27262	96.47	84.81	108.12	97.05	264.58	0.994	0.990	0.998
	20-21	400	48734	82.08	74.03	90.11	59.37	289.35	1.382	1.377	1.388
	22-24	518	66663	77.70	71.01	84.39	52.83	352.21	1.471	1.464	1.477
	25-29	629	103901	60.54	55.81	65.27	49.55	514.86	1.222	1.215	1.229
	30-34	329	94909	34.66	30.92	38.41	36.49	346.31	0.950	0.940	0.960
	35-39	184	83935	21.92	18.75	25.08	25.86	217.06	0.848	0.833	0.862
	40-44	80	46331	17.27	13.48	21.04	19.51	90.40	0.885	0.853	0.917
	45-61	20	13610	14.70	8.26	21.09	18.81	25.61	0.781	0.730	0.832
	Total	2423	485345	49.92	47.94	51.91	52.23	2534.98	0.956	0.953	0.958
Total		38696	7408712	52.23	51.71	52.75	52.23	38696.00	1.000	0.990	1.010

Saving Univariate Output

After you have calculated a Univariate analysis you can save the output under a filename for later viewing.

❶ Choose the **SAVE** push button from the UNIVARIATE ANALYSIS dialog box.

❷ Type a file name in the text editing box. EPYSIS will only accept eight characters for file names and automatically adds an .euq extension to you eight character file name.

❸ Choose the **OK** push button.

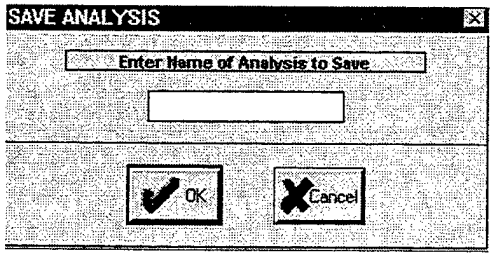


Figure 4.9 Save Analysis dialog box.

Viewing a Previously Saved Univariate Analysis

❶ Choose *Review Univariate Analysis* from the Univariate menu.

❷ Select a file name by pointing to the name and clicking with your left mouse button.

❸ Choose the **SHOW** push button.

Your output will be displayed in WnBrowse a windows editor, read chapter 5, Using WnBrowse, to learn how to use the editor.

❹ Choose the **OK** push button after you are finished viewing the univariate analysis outputs.

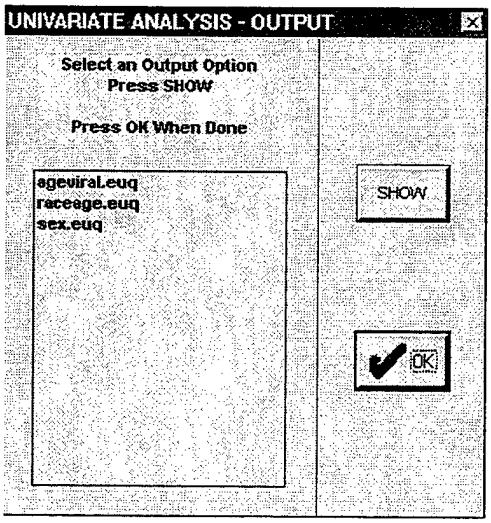


Figure 4.10 Univariate Output dialog box.

Multivariate Analysis

You will have need to select two or more dependent variables (illness codes) from the DATABASE-DEFINITION dialog box to perform a multivariate analysis.

> *Note:* Before you perform a multivariate analysis you need to extract the database, see the section titled, "Database Extraction", on page 35.

> **Caution:** A group of illness codes (selected by giving a range or choosing major or minor categories) is consider one dependent variable. The group of illnesses is considered the unit of measure and therefore counted as one dependent variable. If you want to run a multivariate analysis on a range of codes or one minor/major illness category, you will need to list the codes individually.

❶ Choose *Perform Multivariate Analysis* from the Multivariate menu.

❷ Select a file name by pointing to the name and clicking with your left mouse button.

A warning will appear if the file name you choose does not have two or more dependent variables (illness groups). If this happens you will not be able to perform a Multivariate analysis on this filename.

❸ Choose the **OK** push button.

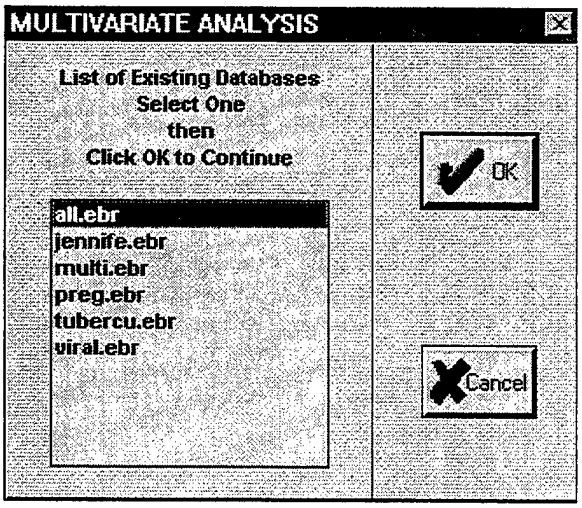
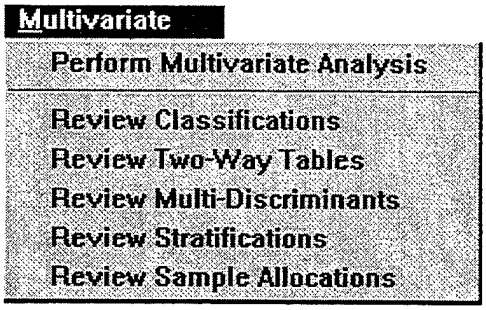


Figure 4.11 Multivariate Analysis dialog box.

It will take several minutes to perform a Multivariate analysis. A dialog box will appear with a status bar and the percent of extraction completed. Wait until the dialog box disappears before attempting to review the output.

Reviewing your Multivariate Output

There are several ways to review your multivariate analysis: Review Classification, Two-Way Tables, and Multi-Discriminants. The last two options on the Multivariate menu, Stratifications and Sample Allocations, allow you to evaluate sampling strategies for the selected ICD-9/NHRC illness codes.



Note: In order to display all the information on your computer screen, some terms in the statistical output will be abbreviated. For example, Platforms use acronyms. To decipher the abbreviations refer to the appropriate Appendix.

Reviewing Classifications

Reviewing classifications allows you to perform a cluster analysis on illnesses codes (NHRC or ICD-9 codes) and time (months). You can statistically group the NHRC/ICD-9 codes into strong interrelated subgroups in relation to time (Month). You have the option to view the statistical documentation and a graphical dendrogram of the cluster.

❶ Choose *Review Classifications* from the Multivariate menu.

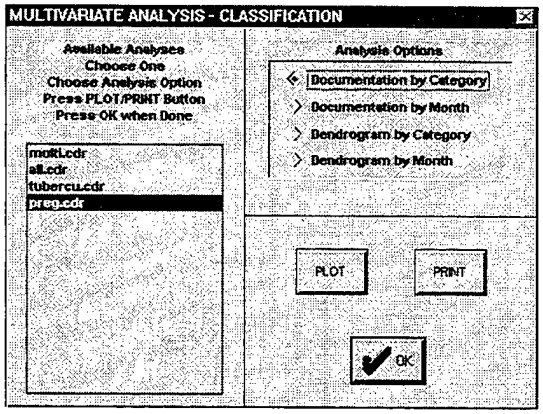


Figure 4.13 Analysis Classification dialog box.

❷ Select a filename by pointing to the name and clicking with your left mouse button.

❸ Select an analysis option (Documentation by Category, Documentation by Month, Dendrogram by Category or Dendrogram by Month) located on the right-hand side of the dialog box by clicking the option with your mouse. (See explanation of options page starting on page, 46).

❹ Choose the **PLOT** push button if you want to view the results in color and choose the **PRINT** push button if you want to view your results in black and white.

> *Note:* There is no difference between the **PLOT** and **PRINT** push button if you choose either the Documentation by Category or the Documentation by Month option.

Documentation by Category and Month

Statistical documentation for Dendrogram by Category and Month.

The statistical documentation shows the linkages between the independent and classification variable along with the similarity coefficient, the probability the linkage is not due to chance alone (CCCS), and the upper (ZU) and lower (ZL) bounds on the probability.

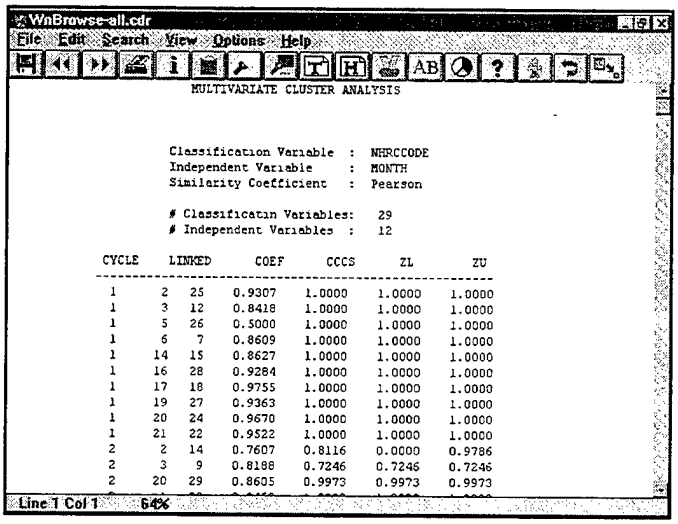


Figure 4.14 An example of Documentation by Category.

Refer to Figure 4.14 for illustration of the following definitions.

Classification variable: Ancillary variables being clustered.
Independent variable: Month or NHRC/ICD-9 illness categories.
Similarity Coefficient: Pearson.
 # Classification Variables: Total number of months (12) or number of NHRC/ICD-9 illness categories.
 # Independent Variables: Total number of months (12) or number of NHRC/ICD-9 illness categories.

Acronyms used in the statistical documentation.

COEF correlation coefficient for the two variables (Illness category and month)
CCCS probability that the COEF is not equal to 0.
ZL lower confidence limits of CCCS.
ZU upper confidence limits of CCCS.

Dendrogram by Category and Month

NHRC/ICD-9 categories or months are grouped into classes by cluster analysis and represented graphically as a Dendrogram. The darker lines within the body of the dendrogram represent linkages for which the probability that the entities linked belong to the same class is reflected on the X axis.

Figure 4.15 gives an example of a dendrogram resulting from the classification of 29 major NHRC categories. The 29 major NHRC categories are clustered and sub-grouped in relation to time.

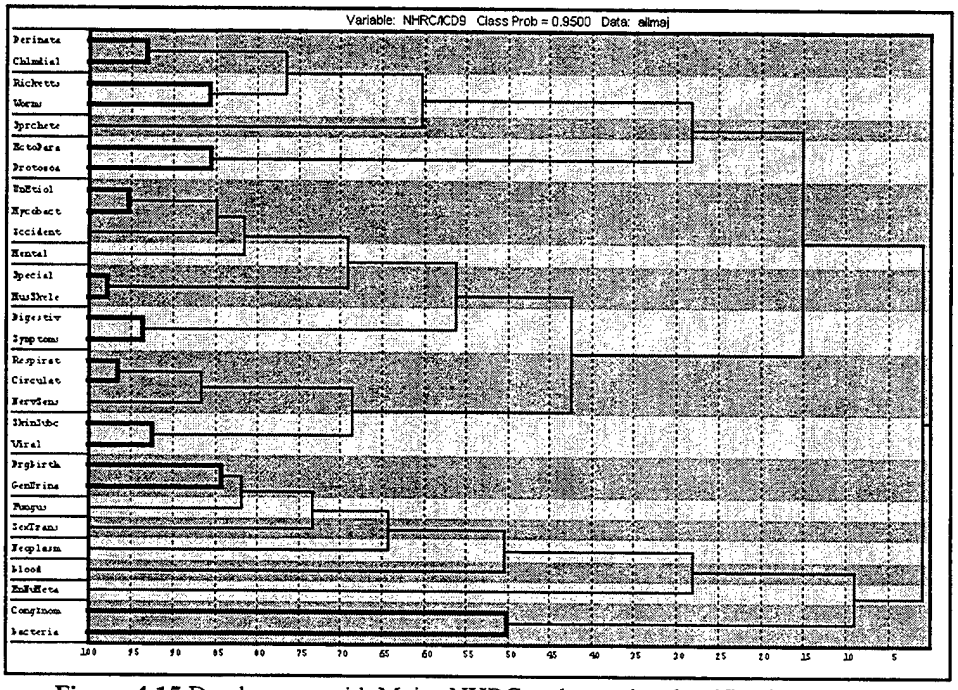


Figure 4.15 Dendrogram with Major NHRC codes as the classification variable.

Figure 4.16 gives an example of a dendrogram with months as the classification variable.

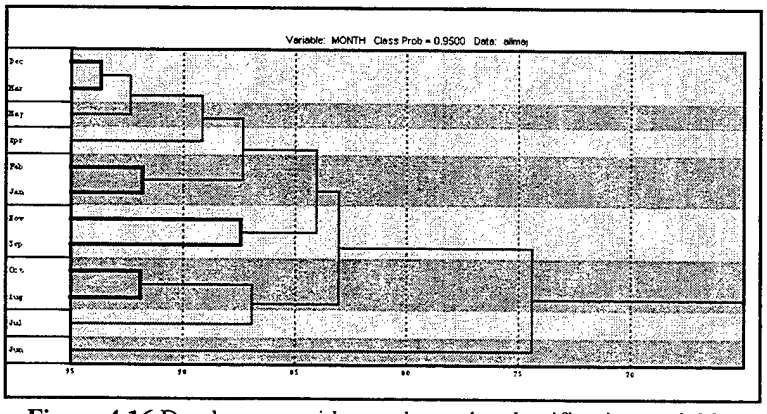


Figure 4.16 Dendrogram with months as the classification variable.

Two-Way Tables

Two-way tables show graphically the incidence rates between any two variables selected. The darker the square the higher the incidence rate.

❶ Choose *Two-Way Tables* from the Multivariate Menu.

❷ Select a filename by pointing to the name and clicking with your left mouse button.

❸ Click on an analysis option located on the right-hand side of the dialog box.

❹ Choose the **PLOT** push button if you want to view the results in color and choose the **PRINT** push button if you want to view your results in black and white.

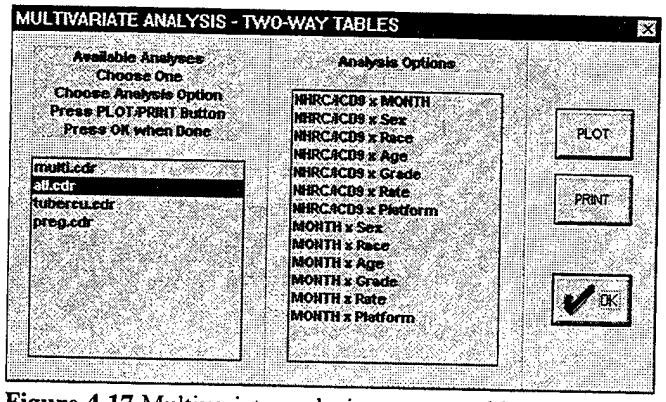


Figure 4.17 Multivariate analysis-two way tables dialog box.

Figure 4.17 is an example of a dot-density diagram with viral hepatitis and age as the analysis option variables. This figure shows the eight individual ICD-9 codes for viral hepatitis by age group. The darker a particular cell, the higher the incidence rate. Hepatitis B (ICD-9 code 07030) without mention of hepatic coma in the 25-29 age group represents the highest incidence rate.

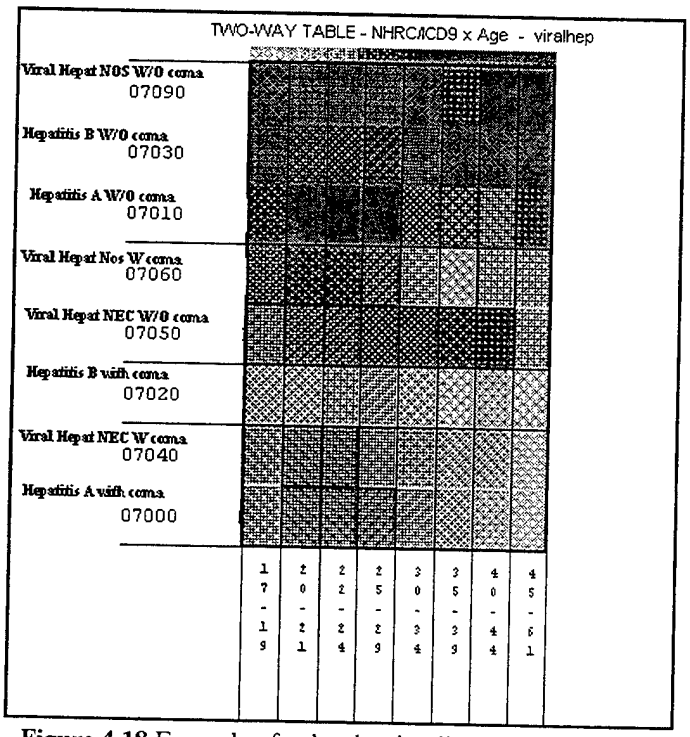


Figure 4.18 Example of a dot-density diagram (Age & viral hepatitis).

Multi-Discriminants

Multi-Discriminants analysis shows two variables and their similarity in temporal trends over the time period selected. You can either view the statistical documentation (Documentation — *variable name*) or the graphical representation (Graphics — variable *name*).

❶ Choose *Review Classifications* from the Multivariate menu.

❷ Select a filename by pointing to the name and clicking with your left mouse button.

❸ Select an analysis option (Documentation — *variable name* or Graphics — *variable name*) located on the right-hand side of the dialog box by clicking the option with your mouse. See explanation of options starting on page 49.

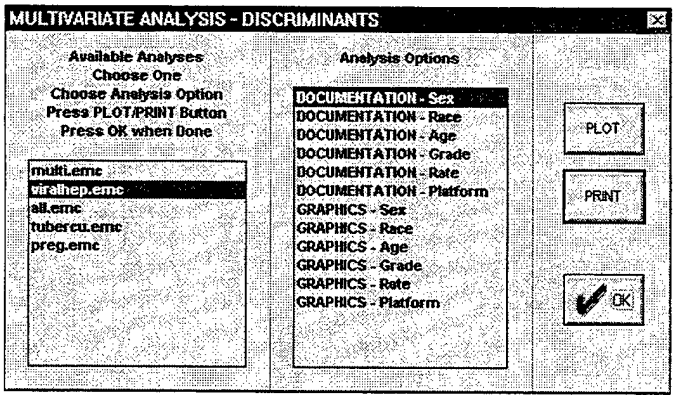


Figure 4.19 Multivariate analysis - Discriminants dialog box.

❹ Choose the **PLOT** push button if you want to view the results in color and choose the **PRINT** push button if you want to view your results in black and white or you want to print your output.

> *Note:* There is no difference between the **PLOT** and **PRINT** push button if you choose any of the Documentation — *variable name* options.

Graphics — *variable name* options

Figure 4.19 & 4.20 are plots of the canonical variables hepatitis by sex and hepatitis by race. These figures show the individual ICD-9 codes grouped into four classifications based upon their similarity in temporal trends over a 14-year period plotted against sex and race. Both sex and race show strong discrimination for three of the eight ICD-9 viral hepatitis codes. This implies the hospitalization rates for this group is considerably different between males and females (higher in males and among race (higher in blacks).

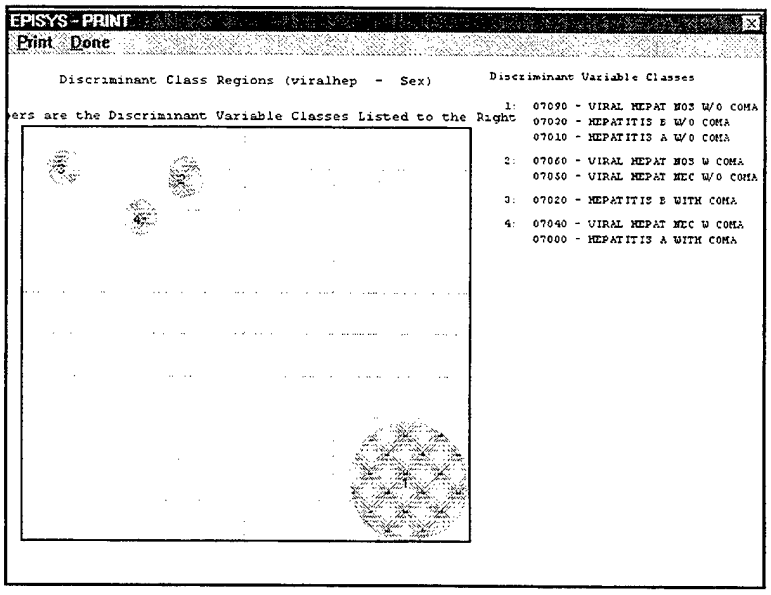


Figure 4.20 Multiple Discriminant graphical output (hepatitis by race).

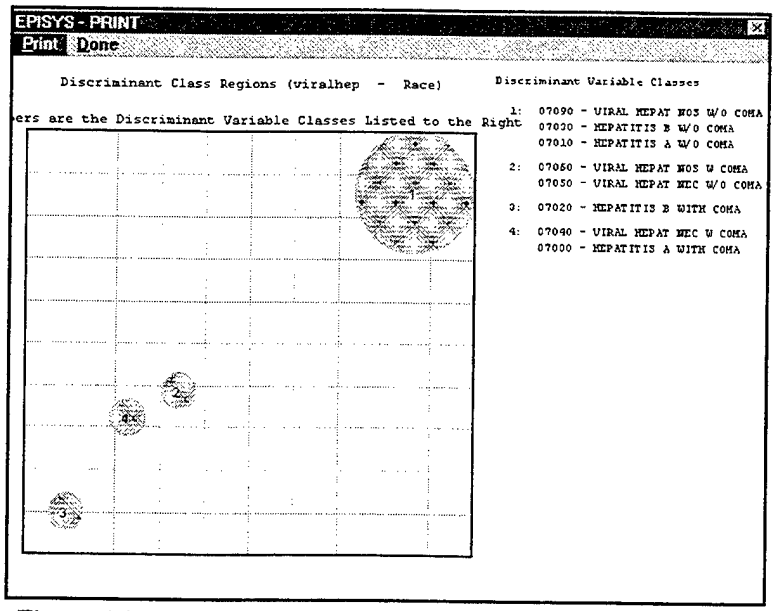


Figure 4.21 Multiple Discriminant graphical output (hepatitis by sex)

Documentation — *variable name* options

This is an example of the statistical documentation for multiple discriminant analysis. The explanations of this statistical documentation is beyond the scope of this manual. Please refer to the following statistical text for an explaination of multiple discriminant analysis:

Harris, R. J. (1985) A Primer of Multivariate Statistics, 2nd edn. Orlando: Academic Press, Inc.

```
        MULTIPLE DISCRIMINANT ANALYSIS

                        Discriminant Data Set:
                        Ancillary Variable    :  Sex
================================================================================
                      Discriminant Variable Classes

--------------------------------------------------------------------------------
Class-1 :   07090 - VIRAL HEPAT NOS W/O COMA
            07030 - HEPATITIS B W/O COMA
            07010 - HEPATITIS A W/O COMA
--------------------------------------------------------------------------------
Class-2 :   07060 - VIRAL HEPAT NOS W COMA
            07050 - VIRAL HEPAT NEC W/O COMA
--------------------------------------------------------------------------------
Class-3 :   07020 - HEPATITIS B WITH COMA
--------------------------------------------------------------------------------
Class-4 :   07040 - VIRAL HEPAT NEC W COMA
            07000 - HEPATITIS A WITH COMA
--------------------------------------------------------------------------------

                        Descriptive Statistics

Variable          Mean      Var(total)    Var(among)  Var(within)
------------------------------------------------------------------
Male          2.3747e+00    8.0235e+00    1.2179e+00   1.7198e+00
Female        1.7688e+00    3.5787e+00    6.2456e-01   1.4178e+00
------------------------------------------------------------------

================================================================================
                        Eigenvector Statistics

Variable       Eigenvalue       % Variance
-----------------------------------------
Male         3.044682e+00        97.038660
Female       9.291490e-02         2.961340
-----------------------------------------
```

```
Variable   Eigenvectors -->
---------------------------------
Male        7.4241e-01 -6.6995e-01
Female      6.6995e-01  7.4241e-01
---------------------------------

Variable   Correlations -->
---------------------------------
Male        9.9520e-01 -7.6217e-01
Female      9.8847e-01 -5.7835e-01
---------------------------------


                    F-Tests for Ancillary Variables

Nunerator   df:      3
Denominator df:      4

Variable             F-Ratio   Probability
-----------------------------------------
Male                  6.2204     0.94361
Female                3.3656     0.86357
-----------------------------------------
* Pr > level set in Database Options
```

Reviewing Stratifications

EPISYS will evaluate the data you selected and statistically determine what variables need to be stratified. Follow the steps below to evaluate your data set.

❶ Choose *Review Stratifications* from the Multivariate menu.

❷ Select a filename by pointing to the name and clicking with your left mouse button.

❸ Select an analysis option (Sex, Race, Age, Grade, Rate or Platform) located on the right-hand side of the dialog box by clicking the option with your mouse.

❹ Choose the **PLOT** push button if you want to view the results in color and choose the **PRINT** push button if you want to view your results in black and white.

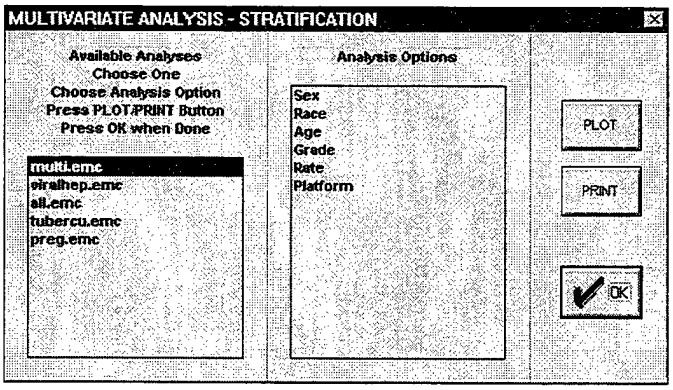


Figure 4.22 Multivariate analysis stratification dialog box.

A graph will appear similar to Figure 4.22 . In this example the 45-61 age range is the only age disimilar from the other age groups. Therefore, the age variable only needs two age groups: 45 and above and ages falling below 45.

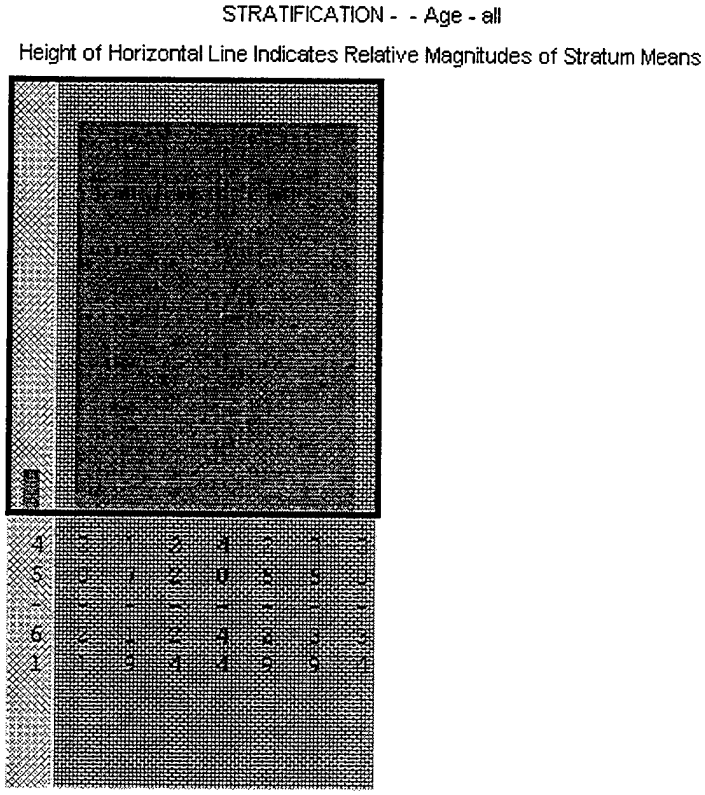


Figure 4.23 Example of stratifications with age as the variable.

Reviewing Sample Allocations

EPISYS can evaluate the selected data set and statistically determine the minimum sample size.

Follow the steps to statistically determine the minimum sample size:

❶ Choose *Review Sample Allocations* from the Multivariate menu.

❷ Select a filename by pointing to the name and clicking with your left mouse button.

❸ Choose the **SHOW** push button.

A text document will appear similar to Table 4.2

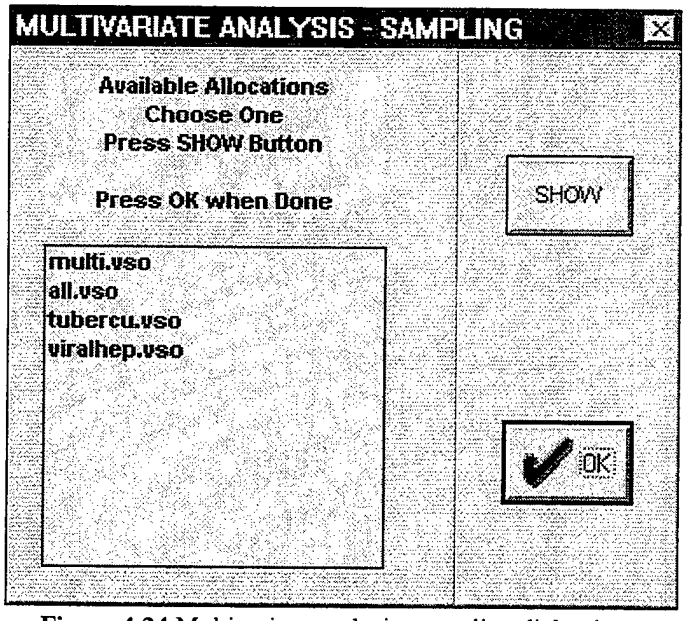


Figure 4.24 Multivariate analysis -sampling dialog box.

Table 4.2 Sample Allocations for Sex, Race, Age and Grade

Total Sample Size: 333

Variable - Sex

Stratum	Members	Proportion(%)	Sample Size
Stratum 1:	Female	100.00	333

Variable - Race

Stratum	Members	Proportion(%)	Sample Size
Stratum 1:	Black	100.00	333
	White		
	Other		

Variable - Age

Stratum	Members	Proportion(%)	Sample Size
Stratum 1:	45-61	1.08	4
Stratum 2:	20-21	98.92	329
	17-19		
	22-24		
	40-44		
	25-29		
	35-39		
	30-34		

Variable - Grade

Stratum	Members	Proportion(%)	Sample Size
Stratum 1:	E3	19.97	67
Stratum 2:	E2	11.49	38
Stratum 3:	E1	9.16	31
Stratum 4:	E4	59.38	198
	E9		
	E5		
	E8		
	E6		
	E7		

The Method for applying sample sizes is as follows:

(1) Select one of the variables listed to use as the basis for sampling.

(2) Randomly choose from within each stratum the number of encounters indicated.

(3) Choose encounters randomly from among the variable realizations included in the stratum.

Chapter 5

Using WnBrowse

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Printing

You can print the entire file or a selected portion of a file. The Print dialog box allows you to set margins and define headers and footers. You may also print a file using the default printer font and not the currently selecting viewing font.

❶ Choose *Print* from the File menu

or choose the **PRINT**  push button.

The Print option dialog box will appear.

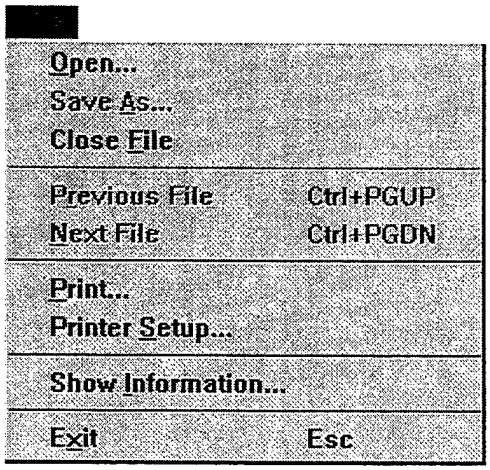

Figure 5.1 The File Menu.

Adding Headers and Footers to the Output

If the **Print headers and footers** option box is selected the dialog box will expanded to include two extra edit boxes, one for the header text and one for the footer text. You may use the default values, or select your own. Along with the text in the header and footer string, you can include the following special codes:

&d - inserts the current date
&t - inserts the current time
&p - inserts the current page number
&f - inserts the file name

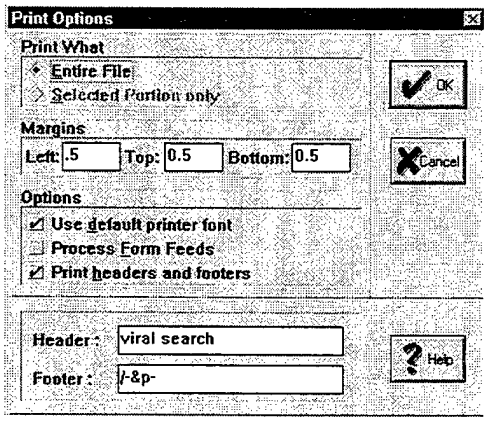

Figure 5.2 Print Options dialog box.

Along with the special codes, you can use the '/' character to left justify, right justify and center the text contained in the headers and footers. For example:

File name/page/Date

Will print the word "File" left justified, the word "Date" right justified and the word "page" in the center of the page.

//Page &p

Prints "Page n" right justified

Using the Search Features

All search features are located under the Search Menu.

To search for a text or numeric string . . .

❶ Choose *Find* from the Search menu.

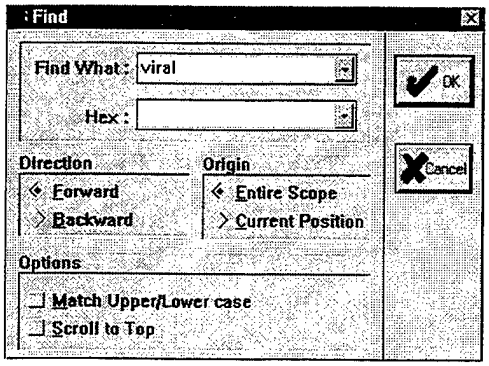

Figure 5.3 Find dialog box.

❷ Type a word or word part in the Find What: text editing box.

❸ You can specify the direction of the search, **backwards** or **forwards** by clicking the option in the Direction option box.

❹ You can specify from where the search commences. **Entire Scope** searches form the top or bottom of the file. **Current Position** searches from the top or bottom of the current window.

❺ If you want your search to be case sensitive click the **Match Upper/Lower Case** option.

WnBrowse will identify the word or word part by highlighting the string, however, unless you specify by clicking the **Scroll to Top** option box the highlighted word will not scroll to the top of the screen. If you do not want to scroll for the string of text check the **Scroll to Top** option box.

❻ Choose the **OK** push button to begin your search.

Repeat Last Find

You can repeat your previous search without pulling up the Find dialog box.

❶ Choose *Repeat Last Find* from the Search menu.

A warning will appear if no occurrences are found.

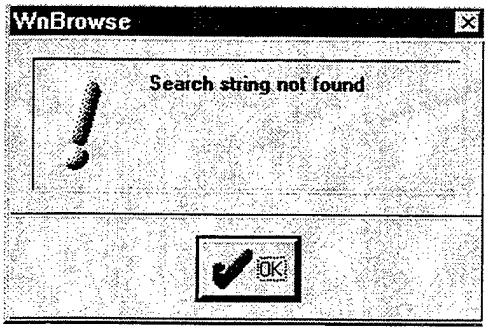

Figure 5.4 Warning dialog box.

Goto

The Goto command allows you to position your curser on a different line number.

❶ Choose *Goto* from the Search menu.

❷ Enter a line number and choose the **OK** push button.

Selecting Text

You can use a mouse to select text from the file being browsed. The selected text is displayed in a different color to distinguish it from the unselected text. You can copy selected text to the clipboard, print it on an attached printer, or save it to a file.

1. Move the cursor to the first or last character you wish to select.
2. Press and hold the left mouse button. The cursor will change.
3. Drag the mouse, up or down, left or right, until you have selected the required text.
4. Release the mouse button.

> *Note:* If you move the mouse above or below the WnBrowse window, the text will be scrolled while being selected.

> *Note:* If you want to select a large portion of the file, click and hold the mouse before the first character required, then press the **Page-Down** key to select text a page at a time.

Selecting All Text

You can select the entire contents of a file.

1. Choose *Select All* from the Edit menu.

> *Note:* Selected text can be copied to the Windows clipboard, printed, or saved to a file.

Selecting Screen and Printer Fonts

WnBrowse supports fonts for both displaying and printing the selected file. Fonts are selected by using the Select Font command from the options menu. The number of fonts available will vary according to the currently selected printer.

1. Choose *Select Font* from the Options menu.
2. Select a font, style and size by scrolling through the list.

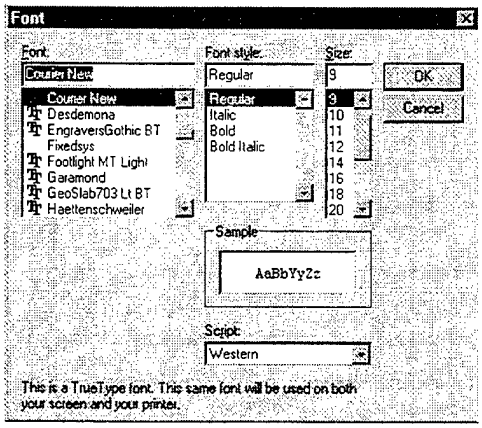

Figure 5.5 Fonts dialog box.

❸ Choose the **OK** push button.

> **Caution:** All EPISYS output uses Courier New, font size 9 because it is a nonproportional or fixed-pitch font, meaning each character takes up the same amount of space. If you change the font type, the columns will not line up and if you increase the point size the information will not fit on the screen.

Button Bar

The WnBrowse button bar allows you to do many operations with a single click of a mouse button. The following buttons are available. If the button bar is not displayed you will need to choose **Display Button Bar** from the Options menu.


Displays the file open dialog box.


Browse the previous file.


Browse the next file.


Print the current file.


Display information about the current file.


Copy selected text to the Windows clipboard.


Search the file for a character string


Repeat the previous search.


Display the file in the text view mode.


Display the file in the hex view mode.


Display the files contained within a ZIP file.


Select a font.


Set your color preferences.


Display the WnBrowse help.


Launch the file with it's associated application.


Redisplay the previous ZIP file


Close the current file and Iconize

Note: If a button is disabled then it will be grayed and will not go down when it is clicked. For example, the clipboard button is disabled when there is no selected text, and the launch button is disabled when the file has no associated application.

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Appendix A

Major and Minor Illness Categories

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Major and Minor Illness Categories:

The following list is of major and minor illness categories each category is sorted by their major code, just as it appears in the major and minor dialog boxes. There are 29 major illness categories and 1,018 minor illness categories.

> *Note:* Both ICD-9 and NHRC codes are grouped into the following 29 major illness categories and 1,018 minor illness categories.

Major Code	Major Code Title	Minor Code	Minor Code Title
1	Viral Diseases	48	Measles
1	Viral Diseases	49	Rubella
1	Viral Diseases	45	Chickenpox
1	Viral Diseases	46	Herpes zoster
1	Viral Diseases	47	Herpes simplex
1	Viral Diseases	43	Smallpox
1	Viral Diseases	40	Acute Poliomyelitis
1	Viral Diseases	41	Meningitis Aseptic (Enterovirus)
1	Viral Diseases	42	Enteroviral Disease ENS Other
1	Viral Diseases	44	Cowpox
1	Viral Diseases	50	Viral Exanthemata Other
1	Viral Diseases	51	Yellow Fever
1	Viral Diseases	52	Dengue
1	Viral Diseases	53	Encephalitis Viral Mosquito-Borne
1	Viral Diseases	54	Encephalitis Viral Tick-Borne
1	Viral Diseases	55	Encephalitis unspecified Arthropod-Borne
1	Viral Diseases	56	Encephalitis Acute Epidemic
1	Viral Diseases	57	Encephalitis Viral
1	Viral Diseases	58	Hemorrhagic Fever Arthropod-Borne
1	Viral Diseases	59	Hemorrhagic Fever Epidemic
1	Viral Diseases	60	Viral Arthropod-Borne Other

Major Code	Major Code Title	Minor Code	Minor Code Title
1	Viral Diseases	61	Hepatitis Viral
1	Viral Diseases	62	Rabies
1	Viral Diseases	63	Mumps
1	Viral Diseases	65	Coxsackie Virus Disease
1	Viral Diseases	66	Mononucleosis Infectious
1	Viral Diseases	68	Viral Disease Conjunctiva Other
1	Viral Diseases	69	Viral Disease Other
2	Bacterial Diseases	1	Cholera
2	Bacterial Diseases	2	Typhoid Fever
2	Bacterial Diseases	3	Paratyphoid Fever
2	Bacterial Diseases	4	Salmonella Infection Other
2	Bacterial Diseases	5	Dysentary Bacillary
2	Bacterial Diseases	6	Food Poisoning Bacterial
2	Bacterial Diseases	10	Diarrheal Disease
2	Bacterial Diseases	22	Plague
2	Bacterial Diseases	23	Tularemia
2	Bacterial Diseases	24	Anthrax
2	Bacterial Diseases	25	Brucellosis
2	Bacterial Diseases	26	Glanders
2	Bacterial Diseases	27	Melioidosis
2	Bacterial Diseases	28	Rat-Bite Fever
2	Bacterial Diseases	29	Bacterial Disease Zoonotic Other
2	Bacterial Diseases	30	Leprosy
2	Bacterial Diseases	32	Diphtheria
2	Bacterial Diseases	33	Whooping Cough
2	Bacterial Diseases	34	Streptococcal Sore Throat/Scarlet Fever
2	Bacterial Diseases	35	Erysipelas
2	Bacterial Diseases	36	Meningococcal Infection
2	Bacterial Diseases	37	Tetanus

Major Code	Major Code Title	Minor Code	Minor Code Title
2	Bacterial Diseases	38	Septicemia
2	Bacterial Diseases	39	Bacterial Disease Other
3	Mycobacterial Diseases	12	Tuberculosis Pulmonary
3	Mycobacterial Diseases	13	Tuberculosis Other Respiratory
3	Mycobacterial Diseases	14	Tuberculosis Meninges CNS
3	Mycobacterial Diseases	15	Tuberculosis Intestine/Peritoneum/Mesenteric
3	Mycobacterial Diseases	16	Tuberculosis Bones and Joints
3	Mycobacterial Diseases	17	Tuberculosis Genitourinary System
3	Mycobacterial Diseases	18	Tuberculosis Other Organs
3	Mycobacterial Diseases	19	Tuberculosis Disseminated
3	Mycobacterial Diseases	20	Tuberculosis Late Effects
3	Mycobacterial Diseases	21	Tuberculosis Unspecified Site
3	Mycobacterial Diseases	31	Mycobacterial Disease Other
4	Rickettsial Diseases	72	Rickettsiosis Tick-Borne
4	Rickettsial Diseases	64	Psittacosis
4	Rickettsial Diseases	73	Rickettsiosis Tick-Borne
4	Rickettsial Diseases	70	Typhus
5	Chlamydial Diseases	67	Trachoma
6	Sexually Transmitted Diseases	80	Syphilis Congenital
6	Sexually Transmitted Diseases	81	Syphilis Early Symptomatic
6	Sexually Transmitted Diseases	82	Syphilis Early Latent

Major Code	Major Code Title	Minor Code	Minor Code Title
6	Sexually Transmitted Diseases	83	Syphilis Cardiovascular
6	Sexually Transmitted Diseases	84	Syphilis CNS
6	Sexually Transmitted Diseases	85	Syphilis Other and Unspecified
6	Sexually Transmitted Diseases	86	Syphilis
6	Sexually Transmitted Diseases	87	Gonococcal Infection
6	Sexually Transmitted Diseases	88	Venereal Disease Other
6	Sexually Transmitted Diseases	13	Trichomoniasis Urogenital
7	Fungus Diseases	94	Dermatophytosis
7	Fungus Diseases	95	Dermatophytosis Other/Unspecified
7	Fungus Diseases	96	Moniliasis
7	Fungus Diseases	97	Actinomycosis
7	Fungus Diseases	98	Coccidiomycosis
7	Fungus Diseases	00	Blastomycosis
7	Fungus Diseases	01	Fungus Other
8	Spirochete Caused Diseases	78	Relapsing Fever
8	Spirochete Caused Diseases	89	Leptospirosis
8	Spirochete Caused Diseases	90	Vincent's Angina
8	Spirochete Caused Diseases	91	Yaws
8	Spirochete Caused Diseases	92	Pinta
8	Spirochete Caused Diseases	93	Spirochete Infection Other
9	Protozoal Diseases	74	Malaria
9	Protozoal Diseases	75	Leischmaniasis

Major Code	Major Code Title	Minor Code	Minor Code Title
9	Protozoal Diseases	76	Trypanosomiasis American
9	Protozoal Diseases	77	Trypanosomiasis Other
9	Protozoal Diseases	12	Toxoplasmosis
9	Protozoal Diseases	7	Amebiasis
9	Protozoal Diseases	8	Protozoal Intestinal Disease Other
10	Ectoparasites	114	Pediculosis
10	Ectoparasites	115	Acariasis
10	Ectoparasites	116	Infestation Other
10	Ectoparasites	117	Arthropod Other
11	Worm Caused Diseases	102	Schistosomiasis
11	Worm Caused Diseases	103	Trematode Infection Other
11	Worm Caused Diseases	104	Hydatidosis
11	Worm Caused Diseases	105	Cestode Infection Other
11	Worm Caused Diseases	106	Trichiniasis
11	Worm Caused Diseases	107	Filarial Infection
11	Worm Caused Diseases	108	Ancylostomiasis
11	Worm Caused Diseases	109	Helminthiasis Intestinal Other
11	Worm Caused Diseases	110	Helminthiasis Other/Unspecified
11	Worm Caused Diseases	111	Intestinal Parasitism Unspecified
12	Uncertain Etiology	118	Sarcoidosis
13	Neoplasms	1002	Neoplasm
14	Metabolic Diseases	1003	Endocrine/Nutrition/Metabolic
15	Diseases of Blood	1004	Blood/Blood-Forming Organs
16	Mental Disorders	1005	Mental Disorder

Major Code	Major Code Title	Minor Code	Minor Code Title
17	Nervous System/Sense Organs	1006	Nervous System/Sense Organs
18	Diseases of Circulatory System	1007	Circulatory System
19	Diseases of Respiratory System	1008	Respiratory System
20	Diseases of Digestive System	1009	Digestive System
21	Diseases of Genitourinary System	1010	Genitourinary System
22	Complications of Pregnancy/Childbirth	1011	Pregnancy/Childbirth
23	Diseases of Skin/Subcutaneous Tissue	1012	Skin/Subcutaneous Tissue
24	Diseases of Musculosketal System	1013	Musculoskeletal System
25	Congenital Anomalies	1014	Congenital Anomaly
26	Perinatal Morbidity/Mortality	1015	Perinatal Morbidity/Mortality
27	Symptomatic/Ill-Defined Conditions	1016	Symptomatic/Ill-Defined
28	Accident/Poisoning/ Violence	1017	Accident/Poisoning/Violence
29	Supplementary/ Special Conditions	1018	Supplementary/Special

Major Illness Categories

Sorted Numerically by Illness Code

1	Viral Diseases
2	Bacterial Diseases
3	Mycobacterial Diseases
4	Rickettsial Diseases
5	Chlamydial Diseases
6	Sexually Transmitted Diseases
7	Fungus Diseases
8	Spirochete Caused Diseases
9	Protozoal Diseases
10	Ectoparasites
11	Worm Caused Diseases
12	Uncertain Etiology
13	Neoplasms
14	Metabolic Diseases
15	Diseases of Blood/Blood-Forming Organs
16	Mental Disorders
17	Nervous System/Sense Organs
18	Diseases of Circulatory System
19	Diseases of Respiratory System
20	Diseases of Digestive System
21	Diseases of Genitourinary System
22	Complications of Pregnancy/Childbirth
23	Diseases of Skin/Subcutaneous Tissue
24	Diseases of Muscoloskeletal System
25	Congenital Anomalies
26	Perinatal Morbidity/Mortality
27	Symptomatic/Ill-Defined Conditions
28	Accident/Poisoning/Violence
29	Supplementary/Special Conditions

Major Illness Categories (cont'd)

Sorted Alphabetically by Title

28	Accident/Poisoning/Violence
2	Bacterial Diseases
5	Chlamydial Diseases
22	Complications of Pregnancy/Childbirth
25	Congenital Anomalies
24	Diseases of Muscoloskeletal System
18	Diseases of Circulatory System
23	Diseases of Skin/Subcutaneous Tissue
15	Diseases of Blood/Blood-Forming Organs
19	Diseases of Respiratory System
21	Diseases of Genitourinary System
20	Diseases of Digestive System
10	Ectoparasites
7	Fungus Diseases
16	Mental Disorders
14	Metabolic Diseases
3	Mycobacterial Diseases
13	Neoplasms
17	Nervous System/Sense Organs
26	Perinatal Morbidity/Mortality
9	Protozoal Diseases
4	Rickettsial Diseases
6	Sexually Transmitted Diseases
8	Spirochete Caused Diseases
29	Supplementary/Special Conditions
27	Symptomatic/Ill-Defined Conditions
12	Uncertain Etiology
1	Viral Diseases
11	Worm Caused Diseases

Appendix B

NHRC Illness Codes

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NHRC Illness Classification System

The NHRC illness classification system was developed to maintain in-house consistency and to include illnesses which were only evident in the naval occupational environment. The International Classification of Disease (ICD-9) is the most commonly used illness classification system used by the medical community, however, when new illnesses arise codes may change. Naval Health Research Center needed a coding system which remain the same when new codes were added. In addition, Naval Health Research Center had to create codes that were specific to the naval occupational environment, for example, war time injuries and illnesses. In addition certain illnesses were broken down further for research purposes.

Currently injuries and diseases are grouped into 29 major diagnostic categories (See Appendix A for a list of major illness codes).

Printing a List of NHRC Codes and Descriptions

❶ Choose the **CODES** push button from the NHRC/ICD9 CODES dialog box.

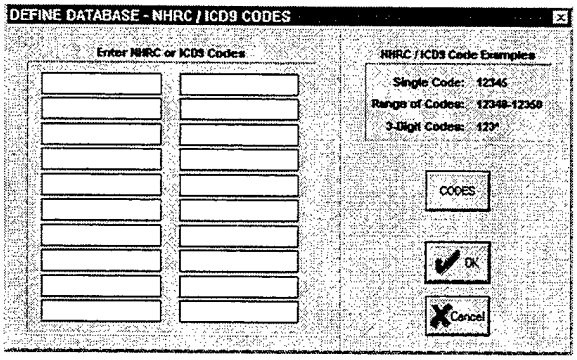

Figure B.1 NHRC/ICD9 CODES dialog box

❷ Choose either **BROWSE** push button.

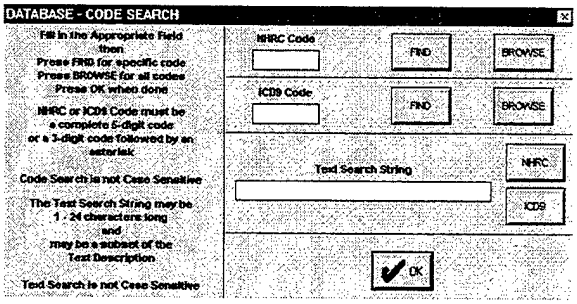

Figure B.2 CODE SEARCH dialog box

This will display all the NHRC codes and ICD-9 codes in WnBrowse, a windows editor.

❸ Choose *Print* from the File menu.

The Print Options dialog box will appear with the defaults appropriately set. To learn how to change the options read Chapter 5, Using Wnbrowse.

❹ Choose the **OK** push button.

Appendix G

Navy Enlisted Occupation Rate Codes

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Occupation Rate Codes and Titles

The Bureau of Naval Personnel produces and updates the occupational rate codes periodically.[4]

Sorted by Rate Code

Only includes naval enlisted personnel occupations

Rate Code	Occupational Title
0100-BM	Boatswains Mate
0150-MA	Master-at-Arms
0200-QM	Quartermaster
0250-SM	Signalman
0300-OS	Operations Specialist
0350-EW	Electronics Warfare Technician
0400-ST	Sonar Technician
0450-OT	Ocean Systems Technician
0500-TM	Torpedoman Mate
0600-GM	Gunners Mate
0610-WT	Weapons Technician
0700-FC	Fire Controlman
0800-FT	Fire Control Technician
0810-MT	Missile Technician
0900-MN	Mineman
1000-ET	Electronics Technician
1010-DS	Data Systems Technician
1080-PI	Precision Instrumentman
1100-IM	Instrumentman
1200-OM	Opticalman
1400-NC	Navy Counselor
1500-RM	Radioman
1600-CT	Communications Technician
1700-YN	Yeoman
1750-LN	Legalman

Rate Code	Occupational Title
1800-PN	Personnelman
1900-DP	Data Processing Technician
2000-SK	Storekeeper
2100-DK	Disbursing Clerk
2200-MS	Mess Management Specialist
2300-IS	Intelligence Specialist
2490-SH	Ships Serviceman
2500-RP	Religious Program
2600-JO	Journalist
2700-PC	Postal Clerk
3100-LI	Lithographer
3200-DM	Illustrator Draftsman
3300-MU	Musician
3600-SN	Seaman
3700-MM	Machinists Mate
3800-EN	Engineman
3900-MR	Machinery Repairman
4000-BT	Boiler Technician
4100-EM	Electricians Mate
4200-IC	Interior Comm Electrician
4300-HT	Hull Maintenance Technician
4400-GS	Gas Turbine Systems Technician
4500-DC	Damage Controlman
4700-ML	Molder
5000-FN	Fireman
5080-CU	Contructionman
5100-EA	Engineering Aid
5280-UC	Utilities Constructionman
5300-CE	Construction Electrician
5380-EQ	Equipmentman

Rate Code	Occupational Title
5500-CM	Construction Mechanic
5600-BU	Builder
5700-SW	Steelworker
5800-UT	Utilitiesman
6000-CN	Constructionman
6080-AF	Aircraft Maintenance Technician
6180-AV	Avionics Technician
6200-AD	Aviation Machinists Mate
6300-AT	Aviation Electrons Technician
6310-AX	ASW Technician
6400-AW	Aviation ASW Operator
6500-AO	Aviation Ordnanceman
6600-AC	Air Controlman
6700-AB	Aviation Boatswains Mate
6800-AE	Aviation Electricians Mate
6900-AM	Aviation Structural Mechanic
7000-PR	Aircrew Survival Equipmentman
7100-AG	Aerographers Mate
7200-TD	Trademan
7300-AK	Aviation Storekeeper
7400-AZ	Aviation Maintenance Administrationman
7500-AS	Aviation Support Equipment Technician
7600-PH	Photographers Mate
7700-PT	Photographic Intelligence man
7800-AN	Airman
8000-HM	Hospital Corpsman
8300-DT	Dental Technician
9999-ZZ	Other

Occupation Rate Codes and Titles

Sorted by Rate Title

Rate Code	Occupational Title
7100-AG	Aerographers Mate
6600-AC	Air Controlman
6080-AF	Aircraft Maintenance Technician
7000-PR	Aircrew Survival Equipmentman
7800-AN	Airman
6310-AX	ASW Technician
6400-AW	Aviation ASW Operator
6700-AB	Aviation Boatswains Mate
6800-AE	Aviation Electricians Mate
6300-AT	Aviation Electrons Technician
6200-AD	Aviation Machinists Mate
7400-AZ	Aviation Maintenance Administrationman
6500-AO	Aviation Ordnanceman
7300-AK	Aviation Storekeeper
6900-AM	Aviation Structural Mechanic
7500-AS	Aviation Support Equipment Technician
6180-AV	Avionics Technician
0100-BM	Boatswains Mate
4000-BT	Boiler Technician
5600-BU	Builder
1600-CT	Communications Technician
5300-CE	Construction Electrician
6000-CN	Constructionman
5500-CM	Construction Mechanic
5080-CU	Contructionman
4500-DC	Damage Controlman
1900-DP	Data Processing Technician
1010-DS	Data Systems Technician

Rate Code	Occupational Title
8300-DT	Dental Technician
2100-DK	Disbursing Clerk
4100-EM	Electricians Mate
1000-ET	Electronics Technician
0350-EW	Electronics Warfare Technician
3800-EN	Engineman
5100-EA	Engineering Aid
5380-EQ	Equipmentman
0800-FT	Fire Control Technician
0700-FC	Fire Controlman
5000-FN	Fireman
4400-GS	Gas Turbine Systems Technician
0600-GM	Gunners Mate
8000-HM	Hospital Corpsman
4300-HT	Hull Maintenance Technician
3200-DM	Illustrator Draftsman
1100-IM	Instrumentman
2300-IS	Intelligence Specialist
4200-IC	Interior Comm Electrician
2600-JO	Journalist
1750-LN	Legalman
3100-LI	Lithographer
3900-MR	Machinery Repairman
3700-MM	Machinists Mate
0150-MA	Master-at-Arms
2200-MS	Mess Management Specialist
0900-MN	Mineman
0810-MT	Missile Technician
4700-ML	Molder
3300-MU	Musician

Rate Code	Occupational Title
1400-NC	Navy Counselor
0450-OT	Ocean Systems Technician
0300-OS	Operations Specialist
1200-OM	Opticalman
9999-ZZ	Other
1800-PN	Personnelman
7600-PH	Photographers Mate
7700-PT	Photographic Intelligence man
2700-PC	Postal Clerk
1080-PI	Precision Instrumentman
0200-QM	Quartermaster
1500-RM	Radioman
2500-RP	Religious Program
3600-SN	Seaman
2490-SH	Ships Serviceman
0250-SM	Signalman
0400-ST	Sonar Technician
5700-SW	Steelworker
2000-SK	Storekeeper
0500-TM	Torpedomans Mate
7200-TD	Trademan
5280-UC	Utilities Constructionman
5800-UT	Utilitiesman
0610-WT	Weapons Technician
1700-YN	Yeoman

Appendix D

Duty Platforms

Contents

Duty Platforms and Acronyms 80

Duty Platforms and Acronyms

A total of 2,208 UICs are available in EPISYS version 1.0. UICs are grouped according to their platform type.

Acronym	Duty Platform
CV	Aircraft Carrier
CVN	Aircraft Carrier, Nuclear
BB/CG	Battleship/Cruiser
CGN	Cruiser, Nuclear
DD/FF	Destroyer/Frigate
DDN/FFN	Destroyer/Frigate, Nuclear
SURFACE	Small Surface Combatants
ASSAULT	Amphibious Assault
SUPPORT	Material Support
REPLENSH	Underway Replenishment
CARGO	Transport Cargo
PERSONNL	Transport Personnel
SS	Submarine
SSN	Submarine Attack , Nuclear
SSBN	Submarine Ballistic Missile, Nuclear
HOSPITAL	Hospital Ship
AUX	Auxiliary/No-combatant
MISC	Miscellaneous
OTHER	Other
ASHORE	Ashore
UNKNOWN	Unknown

Appendix

EPISYS Default Variables

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Incidence/Prevalence

Incidence — 1st Hospitalizations Only

All Major Categories Separately

Viral Diseases
Bacterial Diseases
Mycobacterial Diseases
Rickettsial Diseases
Chlamydial Diseases
Sexually Transmitted Diseases
Fungus Diseases
Spirochete Caused Diseases
Protozoal Diseases
Ectoparasites
Worm Caused Diseases
Uncertain Etiology
Neoplasms
Endocrine/Nutrition/Metabolic Diseases
Diseases of Blood/Blood-Forming Organs
Mental Disorders
Diseases of Nervous System/Sense Organs
Diseases of Circulatory System
Diseases of Respiratory System
Diseases of Digestive System
Diseases of Genitourinary System
Complications of Pregnancy/Childbirth
Diseases of Skin/Subcutaneous Tissue
Diseases of Musculoskeletal System
Congenital Anomalies
Perinatal Morbidity/Mortality
Symptomatic/Ill-Defined Conditions
Accident/Poisoning/Violence
Supplementary/Special Conditions

Sex Categories Separately

Male
Female

All Race Categories Separately

White
Black
Other/Unspecified

Age (Standard Classes) Separately

Ages 17 — 19
Ages 20 — 21
Ages 22 — 24
Ages 25 — 29
Ages 30 — 34
Ages 35 — 39
Ages 40 — 44
Ages 45 — 61

US Navy Only

All Enlisted Grades Separately

Enlisted-1
Enlisted-2
Enlisted-3
Enlisted-4
Enlisted-5
Enlisted-6
Enlisted-7
Enlisted-8
Enlisted-9

All Occupation Rates Separately

0100-BM	Boatswains Mate
0150-MA	Master-at-Arms
0200-QM	Quartermaster
0250-SM	Signalman
0300-OS	Operations Specialist
0350-EW	Electronics Warfare Technician
0400-ST	Sonar Technician
0450-OT	Ocean Systems Technician
0500-TM	Torpedomans Mate
0600-GM	Gunners Mate
0610-WT	Weapons Technician
0700-FC	Fire Controlman
0800-FT	Fire Control Technician
0810-MT	Missile Technician
0900-MN	Mineman
1000-ET	Electronics Technician
1010-DS	Data Systems Technician
1080-PI	Precision Instrumentman
1100-IM	Instrumentman
1200-OM	Opticalman
1400-NC	Navy Counselor
1500-RM	Radioman

1600-CT	Communications Technician
1700-YN	Yeoman
1750-LN	Legalman
1800-PN	Personnelman
1900-DP	Data Processing Technician
2000-SK	Storekeeper
2100-DK	Disbursing Clerk
2200-MS	Mess Management Specialist
2300-IS	Intelligence Specialist
2490-SH	Ships Serviceman
2500-RP	Religious Program
2600-JO	Journalist
2700-PC	Postal Clerk
3100-LI	Lithographer
3200-DM	Illustrator Draftsman
3300-MU	Musician
3600-SN	Seaman
3700-MM	Machinists Mate
3800-EN	Engineman
3900-MR	Machinery Repairman
4000-BT	Boiler Technician
4100-EM	Electricians Mate
4200-IC	Interior Comm Electrician
4300-HT	Hull Maintenance Technician
4400-GS	Gas Turbine Systems Technician
4500-DC	Damage Controlman
4700-ML	Molder
5000-FN	Fireman
5080-CU	Contructionman
5100-EA	Engineering Aid
5280-UC	Utilities Constructionman
5300-CE	Construction Electrician
5380-EQ	Equipmentman
5500-CM	Construction Mechanic
5600-BU	Builder
5700-SW	Steelworker
5800-UT	Utilitiesman
6000-CN	Constructionman
6080-AF	Aircraft Maintenance Technician
6180-AV	Avionics Technician
6200-AD	Aviation Machinists Mate
6300-AT	Aviation Electrons Technician
6310-AX	ASW Technician
6400-AW	Aviation ASW Operator
6500-AO	Aviation Ordnanceman
6600-AC	Air Controlman
6700-AB	Aviation Boatswains Mate
6800-AE	Aviation Electricians Mate
6900-AM	Aviation Structural Mech
7000-PR	Aircrew Survival Equipmentman
7100-AG	Aerographers Mate
7200-TD	Trademan
7300-AK	Aviation Storekeeper
7400-AZ	Aviation Maintenance Administrationman
7500-AS	Aviation Support EquipmentTechnician

7600-PH	Photographers Mate
7800-AN	Airman
8000-HM	Hospital Corpsman
8300-DT	Dental Technician
9999-ZZ	Other

All Duty Platforms Separately

Aircraft Carrier
Aircraft Carrier, Nuclear
Battleship/Cruiser
Cruiser, Nuclear
Destroyer/Frigate
Small Surface Combatants
Amphibious Assault
Material Support
Underway Replenishment
Transport Cargo
Transport Personnel
Submarine
Submarine Attack, Nuclear
Submarine Ballistic Missile, Nuclear
Auxiliary/Non-combatant
Miscellaneous
Other
Ashore

Medical Facilities Combined

National Medical Center, Bethesda MD
Medical Command, Great Lakes IL
Medical Command, Oakland CA
Medical Command, San Diego CA
Hospital, Beaufort SC
Hospital, Bremerton WA
Hospital, Cherry Point NC
Hospital, Charleston SC
Hospital, Corpus Cristi TX
Hospital, Groton CT
Hospital, Great Lakes IL
Hospital, Guam
Hospital, Guantanamo Bay CU
Hospital, Jacksonville FL
Hospital, NAS Keflavik IC
Hospital, Keflavik IC
Hospital, Camp Lejeune NC
Hospital, Lemoore CA
Hospital, Millington TN
Hospital, Naples IT
Hospital, Newport RI
Hospital, Norfolk VA

Hospital, Oak Harbor WA
Hospital, Oakland CA
Hospital, Okinawa JA
Hospital, Orlando FL
Hospital, Patuxent River MD
Hospital, Camp Pendleton CA
Hospital, Pensacola FL
Hospital, Rota SP
Hospital, Roosevelt Roads PR
Hospital, Sigonella IT
Hospital, San Diego CA
Hospital, TwentyNine Palms CA
Hospital, Yokosuka JA
Branch Clinic, Adak AK
Branch Clinic Naval Home, Gulfport MS
Branch Clinic, Iwakuni JA
Regional Medical Center, Jacksonville FL
Regional Medical Center, Long Beach CA
Regional Medical Center, Portsmouth VA
Regional Medical Center, Subic Bay RP
Medical Clinic, Quantico VA
Medical Clinic, Philadelphia PA

Inclusive Dates

1 January 1980 through 31 December 1994

Appendix

Denominator Files

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Making the Denominator Files

The creation of EPISYS.DEN proceeds in two steps. The first step is carried out on the VAX and involves counting all one, two, and three variable interactions in yearly files with the following format:

Variable	Type	Width
(skip)	----	9
treatment year	integer	2
(skip)	----	2
grade	integer	1
rate	char	2
(skip)	----	14
sex	char	1
race	char	1
age	integer	2
(skip)	----	6
branch	integer	2
(skip)	----	15
duty UIC	char	5

There are four FORTRAN programs, necessitated by the size of the data base being processed. The intermediate data files created by these programs contain two fields per record: an index (indicating position in EPISYS.DEN) and the count. The complete set of intermediate files is transferred to the PC.

There is an important issue to be considered at this point in denominator data file creation: that is the necessity for separate DEN files for each year (1980-1994). This necessity is determined by a technique related to analysis of variance and based on detecting yearly differences in trends among population totals, main effect variables, and variable interactions. The purpose of the analysis is to detect any statistically significant trends present in the demographic denominator data set. If this is found to show significant differences, then each main effect variable (sex, race, age, branch, grade, rate, platform, ocean) is tested. For instance, in testing the main effect "sex", the yearly numbers of males and females in the population are tested for differences in trends among years. If any main effects are found to show significant differences, then two and three variable interactions involving the significant variables are tested. A significant yearly population total means that yearly differences in total population must be included in the denominator data files. In turn, any significant yearly differences in main effect, variables or variable interactions means that those yearly differences must also be included in the denominator data files. It should be noted that yearly differences were significant for the current EPISYS demographic denominator data, but that no main effect or interactions were significant. Therefore, only yearly differences are included in the current EPISYS denominator data set and only one DEN file was created.

The final step in creating EPISYS.DEN is to read each of the intermediate data files (described above) and sum them to the appropriate indices. The final data file (EPISYS.DEN) therefore contains one record for each main effect, two variable and three variable interaction in the data set. The current file contains 339,513 records. The file is binary and is ordered with all main effects first followed by all two variable interactions and then all three variable interactions. Along with EPISYS.DEN, another file is created that contains total population counts for each year (EPISYS.MYA). The data in this file is used to adjust calculated denominators for yearly differences.

After EPISYS.DEN is created, an index file (EPISYS.NDX) is also created. This file has in each record an eight digit code (indicating the interaction), an index (the record number in EPISYS.DEN containing the first count for the interaction), and a count (the number of records in EPISYS.DEN for the interaction).

Person-years are calculated by summing the individual counts for main effects and each of the two and three variable interactions across each quarter per year. The data for the denominator are provided by quarter, resulting in a resolution of four months.

Appendix G

Confidence Intervals

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Calculating Confidence Intervals

There are two types of confidence intervals used in EPISYS: confidence intervals about incidence rates and confidence intervals about standardized incidence ratios. Both are handled in a very similar manner using the Incomplete Gamma Distribution. In the case of incidence rates, the numerator is treated as the sum of N random variables where each variable is either 0 or 1 depending on whether the corresponding

$$r = \frac{\sum_{i=1}^{N} x_i}{\sum_{i=1}^{N} 1} = \frac{\sum_{i=1}^{N} x_i}{N}. \qquad (1)$$

member of the population has an incidence of the condition being analyzed. N is the total population size and is therefore a constant with no probability distribution. The incidence ratio is therefore
In this case, $r \leq 1$ and the following Incomplete Gamma Function is used to represent the distribution of r:

$$G(rN|a,1) = \frac{e^{-x} x^{a}}{\Gamma(a+1)} \left[1 + \sum_{i=1}^{\infty} \frac{x^{i}}{(a+1)(a+2) \ldots (a+i)} \right] \qquad (2)$$

where a is the numerator of equation (1) (the degrees of freedom) and the sum on the right hand side of equation (2) is repeated until the contribution of a new term is less than some preset tolerance. The values of rN found by a halving the interval technique correspond to, for instance for 0.95 confidence limits, the 0.025 and 0.975 cumulative probability levels of the prescribed Incomplete Gamma distirbution. The upper and lower confidence limits are then the rN values corresponding to the 0.025 and 0.975 cumulative probabilities, respectively, divided by N. This method is possible in large part because the rate r is constrained in the interval [0,1].

Standardized incidence ratios are a rate divided by a predetermined constant and are not constrained on the interval [0,1]. The same method is used as above except that the following continued fraction is used to calculate the Incomplete Gamma Function.

$$G(rN|a,1) = 1 - \frac{e^{-x} x^{n}}{\Gamma(a)} \left[\frac{1}{x+} \; \frac{1-a}{1+} \; \frac{1}{x+} \; \frac{2-a}{1+} \; \frac{2}{x+} \; \ldots \right] \qquad (3)$$

The upper and lower confidence limits areagain the rN values corresponding to the 0.025 and 0.975 cumulative probabilities, respectively, divided by N.

The Gamma function itself is calculated as follows:

$$\Gamma(a+1) = (a+\gamma+0.5)^{a+0.5} \; e^{-(a+\gamma+0.5)} \sqrt{2\Pi} \left[c_0 + \frac{c_1}{a+1} + \frac{c_2}{a+2} + \ldots + \frac{c_N}{a+N} \right] \qquad (4)$$

Where N = 6,γ = 5, and the constants are as follows:

$$
\begin{aligned}
c_0 &= 1.0 \\
c_1 &= 76.18009173 \\
c_2 &= -86.50532033 \\
c_3 &= 24.01409822 \\
c_4 &= -1.231739516 \\
c_5 &= 0.00120858003 \\
c_6 &= 0.0000053662827465
\end{aligned}
\tag{5}
$$

The best references for the use of our methods for estimation of probabilities associated with Poisson processes are the following:

Kennedy, W. J. & J. E. Gentle. (1980). *Statistical Computing*. New York: Marcel Dekker.

Feller, W. (1957). *An Introduction to probability theory and its applications, volume. I.* (2nd ed). New York: John Wiley and Sons.

Other references are:

Abramowitz, M. & I. Stegun. (1964). *Handbook of mathematical functions*. Washington, D.C.: U.S. Government Printing Office.

Bhattacharjee, G.P. (1970). The incomplete gamma integral. *Applied Statistics, 19*, 285-287.

Ling, R.F. (1978). A study of the accuracy of some approximations for t, X^2, and F tail probabilities. *Journal of American Statistics Association, 73*, 274-283.

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The Epidemiological Interactive System (EPISYS) is a computerized program and database that enables researchers to rapidly access, analyze, and summarize large amounts of epidemiological data. This version of EPISYS contains inpatient hospitalization, demographic, and career history records for all Navy enlisted personnel on active duty between 1 January 1980 and 30 September 1994. The hospitalization data contained in EPISYS are obtained from the Naval Medical Information Management Center, Bethesda, Maryland, (formally the Naval Medical Data services Center) and is updated quarterly. Demographic, occupational, and other service history information is provided by the Navy Military Personnel Command in Washington, D.C.

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