VALE 2000

User's Manual

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Foreword

Welcome to *VALE 2000 User's Manual*, your guide to placing a value on the loss of expected earnings due to disability or death. In this manual, you will learn how to enter information relevant to the analysis and how to generate and analyze loss computation reports. In addition, this manual provides valuable reference information detailing many of the sources used in the system's computations.

VALE 2000 is a *tool* for forensic experts. We emphasize the word "tool" because no computer system can ever be an expert witness. Only a highly trained person is capable of rendering an expert opinion. Computer programs merely provide an expedient means to produce data that the expert is capable of producing manually (albeit much more slowly). Thus, a major purpose of this manual is to provide the expert with the information needed to replicate and confirm these computations.

This manual has five parts:

Introduction provides an introduction to the mechanics of the system and instructions on installing the software. It also provides the US Department of Commerce's definition of occupational disability upon which the disability statistics are based.

Entering Your Data describes the data entry screens used by the system. These chapters provide a valuable reference for the use of each field and highlight issues for consideration when entering a case for analysis.

Using Your Data reviews the reports generated by the system. This is an important resource for a thorough understanding of the output of the program.

Reference details underlying data and computations. This is a "must read" for users who provide expert testimony using the output of the system.

Help provides information on troubleshooting and on obtaining support services.

History

VALE 2000 is the result of many years of government data collection. Data collected by the US Department of Commerce, Bureau of the Census, and the US Department of Labor form the basis of *VALE 2000*. The initial version of VALE was published in 1986, and the first peer review article on the software was published in the Rehabilitation Counseling Bulletin in June of 1987. Companion software titled Worklife Profile was published in 1987 and sold as an adjunct to VALE. It enabled the user to perform both the vocational and the economic aspects of an assessment designed to define the effect of

physical or mental impairment on lifetime loss of earning capacity. VALE has been updated annually since its inception, with a variety of modifications occurring over the years.

In the late 1980s, earnings for workers were reported out in the form of nondisabled and disabled national dollars, and in the early 1990s, earnings for specific local labor markets throughout the nation were incorporated.

Worklife Profile initially provided an assessment of probable worklife expectancy by gender, level of educational attainment, and disability status. The user of the software could modify the worklife expectancy for a disabled person by rendering an opinion as to where a specific individual would fall on the continuum of disability to nondisability. In 1997, a disaggregation of the probability data permitted an analysis of probable worklife expectancy for persons both severely disabled and not severely disabled.

VALE 2000 is a significantly revised piece of software that enables the user to define, based on government data sources, earnings for nondisabled and disabled individuals by gender and level of educational attainment. In addition, the user is able to report out earnings based on a variety of vocational criteria as contained in the Dictionary of Occupational Titles. Earnings data are reported for local, regional, or national labor markets for employed persons with and without disability.

VALE 2000 combines a multitude of government data into one easy-to-use software package. The software was designed for use by vocational experts, accountants, statisticians, vocational rehabilitation counselors, economists, and psychologists involved in defining the effect of disability on the loss of ability to perform work and earn money.

Acknowledgments

VALE 2000 is the result of a 15 year evolution involving a variety of professionals. Vocational experts, vocational rehabilitation counselors, counseling psychologists, clinical psychologists, economists, accountants, statisticians, sociologists, educators, and social science researchers have contributed in varying degrees to the software as it presently exists.

A variety of professionals were involved in the refinement of the original software packages, and VALE 2000 is, most notably, the result of a development team consisting of Dave Gibson, Darryl Rowe, and Gwen Holland. A special thanks is extended to John P. Tierney for his conceptual assistance in the development of VALE over a 15 year period and for his help in producing *VALE 2000*.

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Part I Introduction

Chapter 1 Before You Begin

VALE 2000 User's Manual and *VALE 2000* follow many conventions that are standard across Windows™ systems. This chapter outlines those conventions for users relatively new to Windows™ software.

Manual Format

To facilitate reading of this manual, standard formatting conventions identify special information.

Formatting Convention	Type of Information
Triangular bullet (➢)	Step-by-step procedures. A numbered list will follow, providing all the steps needed to complete a given process.
Italic Type	Specialized terms. This will be either the name of a book, a term used for the first time, or a placeholder for items you must specify.
SMALL CAPITALS	Command keys. The text identifies the name of a key to press on your keyboard. (See the Navigation section below.)

Navigation

Moving through windows and around a screen, or *navigation*, is standardized to a considerable degree for any Windows™ software. For that reason, this manual dedicates minimal attention to those details, and assumes user familiarity with the Windows™ standards. Defined below are a few basic terms used throughout the manual.

Context	Term	Description
Keyboard	TAB	Press the TAB key to move forward between controls, or hold down the SHIFT key and press TAB to move backward.
	ENTER	Press the ENTER key to execute the active control. If the control is a command button, ENTER executes the action associated with the button. If the control is a menu item or combination box (described in Control Definitions in this chapter), ENTER chooses the highlighted selection in the list. If the control has no action associated with it, ENTER acts like the TAB key and moves to the next control.
	Shortcut Keys	Screen prompts or menu items that have one character underlined (such as in the File menu) have shortcut keys assigned. To choose the control or menu item associated with the shortcut key, hold down the ALT key and press the underlined letter on your keyboard as an alternative to using your mouse.
Mouse	Click	When prompted to "click" on an object, move the mouse pointer over that object, press, and immediately release the left mouse button. (The right mouse button has no function in version 1.0 of *VALE 2000*.)
	Select	To select a control with your mouse, simply "click" on it.
All	Active Control	The control that currently has the focus of the system is the *active* control. An active control has either highlighted contents or a blinking cursor.

Control Definitions

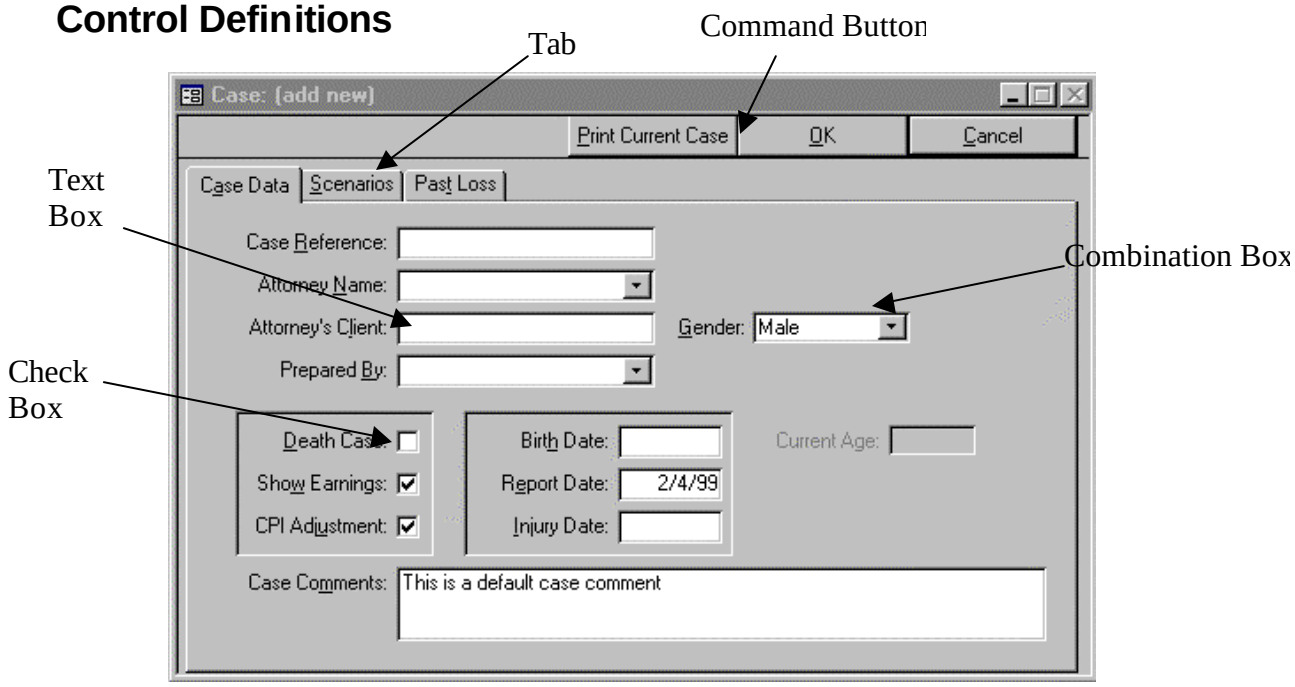

Figure 1 Typical Window

VALE 2000 features many screen components that are familiar to most Windows™ users as *controls*. References to these controls throughout the manual use standardized names for each control type. First, consider the screen shown in Figure 1. This screen demonstrates the following control types:

Control Name	Sample	Description
Text Box	Injury Date	Text boxes prompt for entry of a value by the user. In this example, the user is to type the client's date of injury.
Combination Box	Attorney Name: Smith, John	Sometimes referred to as "drop-down" boxes, combination boxes provide a list of possible choices for the field entry. The user can type directly in the box to scroll to the choice that matches the typed text, or can click on the arrow on the right of the box to expand the list. From an expanded list, the user can scroll through the choices and click on the one desired. For some combination boxes (e.g., Attorneys) the user may add

Control Name	Sample	Description
		a name that does not appear in the box. In this case, the system prompts for addition of the entry to the standard list.
Check Box		Check boxes provide a quick method of responding to "yes/no" or "true/false" prompts. When the box shows a check, the response is set to "yes" or "true." When it is empty, the response is "no" or "false." In this sample, the "Death Case " option box is unchecked, indicating that the analysis is not for a death case. To change the current selection, you may either click on the box with your mouse or press the space bar when the box is the active control. When you do this, the result "toggles" between the yes and no states.
Command Button		Command buttons cause the system to carry out some predefined action, such as closing the form, printing a report, or creating a new case. Simply click on the button or press ENTER when the button is the active control.
Tab		Tabs enable one screen to contain multiple pages or parts. The sample at the left presents three tabs: Case Data, Scenarios, and Past Loss. Each tab has a different set of controls and options for the user to consider. You can move to a different tab simply by clicking it.
Option Button		Use of option buttons (not included in Figure 1) may occur when there is a small, finite number of options, from which

Control Name	Sample	Description
		the user must choose one. These are similar to “radio buttons” in that when one is turned on (selected) the others are turned off. Select one of the options by clicking it with your mouse or using the up and down arrows on your keyboard when the option group is active.

System Help

This manual is the primary source of assistance for the *VALE 2000* user. It contains all of the documentation necessary to understand the user interface and theory behind the system for a forensic expert. In addition to the manual, the system provides two forms of on-line assistance: control tips and status bar prompts. Figure 2 depicts the two forms.

Status Bar

The status bar at the lower, left-hand corner of the *VALE 2000* screen contains a detailed prompt for whatever control is currently active (the control in which the cursor rests). In the sample, the active control is a text box for entry of the Case Reference. The label on the screen simply says “Case Reference.” The status bar text provides the more detailed prompt “Enter a unique name to identify this case on reports.”

This scenario is true for all controls. The limitations of screen size usually restrict the descriptiveness of the label. Therefore, the status bar provides a more detailed prompt.

Control Tips

Control tips provide a method of presenting an abbreviated prompt for a control without making it active. When you move the mouse pointer over a control and let it sit there for a couple of seconds, a control tip appears next to the pointer. In Figure 2, the mouse pointer is sitting over the “Case Reference” control, and the control tip reads, “Case reference for report naming.”

Control tips are usually less detailed than a status bar prompt and are sometimes just a rewording of the control's screen label. They are most useful for items that have no screen label such as tool bar items and command buttons. That is, if only a graphic appears, the control tip will provide a written description of the control.

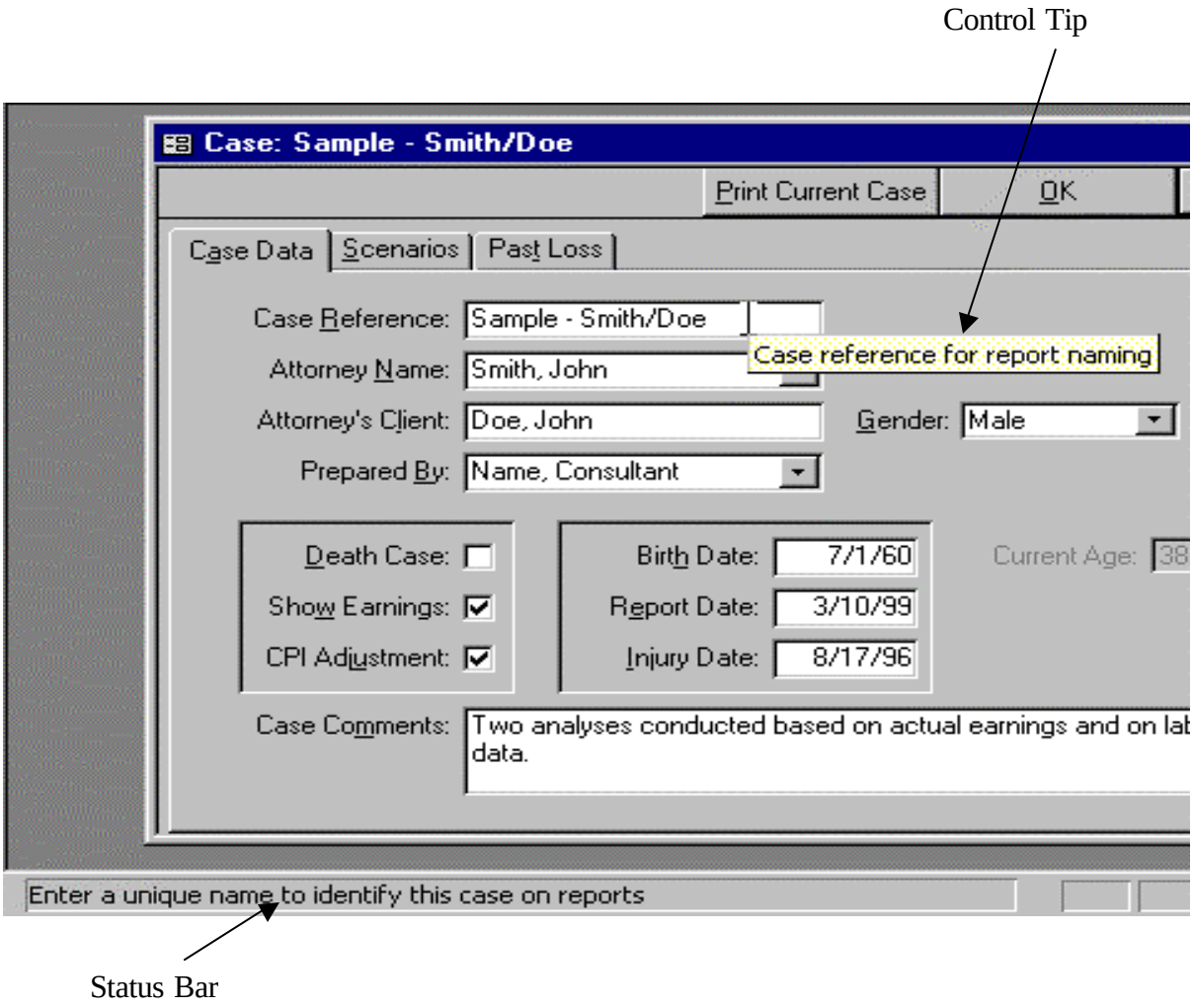

Figure 2 Sample Screen

Chapter 2 Installation

Installation of *VALE 2000* is a simple process, as outlined in this chapter. Whether you are a novice or experienced computer user, these instructions should guide you through the setup process in a few minutes.

Quick Start

Users that are inexperienced with the setup of Windows™ software should skip to the System Requirements section of this chapter. More experienced users can review this section and skip the remainder of the chapter. Please be sure to review the README.TXT file before proceeding.

Except as noted below, installation of *VALE 2000* is similar to all other Windows™ software setup programs. You should close all applications and disable virus detection software before installation.

System Requirements

Before beginning the setup program, confirm that your computer meets the following minimum requirements:

- Pentium 133MHz Processor or higher
- 64 MB of RAM or higher
- Free hard-disk space of up to 161 MB (This number indicates a maximum initial installation; hard-disk space requirements vary depending on existing configuration.)
- CD Drive
- VGA color graphics monitor or higher
- Microsoft Windows 95™ OSR2 (or Windows 95 with Internet Explorer 4.0 or later) or Windows™ 98 (referred to simply as Windows™ throughout this manual); not tested on Windows™ ME
- Microsoft Windows™ NT 4 SP6, Windows™ 2000, or Windows™ XP

You may verify items 1 and 2 by selecting the “System” icon of your Windows™ Control Panel. The General tab displays the processor type and RAM under the “Computer”

heading. The amount of free disk space displays in your Windows™ Explorer. For more information on either of these standard utilities, see your Windows™ system documentation or on-line help.

ReadMe File

The installation CD contains a file named "README.TXT." This document contains the most recent information on topics such as known conflicts with other software or hardware, corrections or additions to the manual, or various technical nuances not covered in the manual. We recommend that you read the contents before you install *VALE 2000*. You may open the file with the Write utility that comes with Microsoft Windows™ or with Microsoft Word™ just by double-clicking the file from Explorer.

Installation

Before beginning the installation, please close all active applications and disable any virus protection software. This reduces the chances of conflicts that may cause an error during setup.

➢ ***VALE 2000* Installation**

1. Insert the setup CD. The setup program may start automatically at this point. If it does, skip to step 3.
2. If your CD does not start automatically, go into Windows™ Explorer and select the "setup" file on the CD-ROM drive. In most systems, this will appear with the filename "setup.exe." If you are missing the .exe file extension, make sure you select the setup file with the file type identified as "Application."
3. The first screen you will see (Figure 3) informs you that the program is copying files needed for installation. You do not need to do anything here.

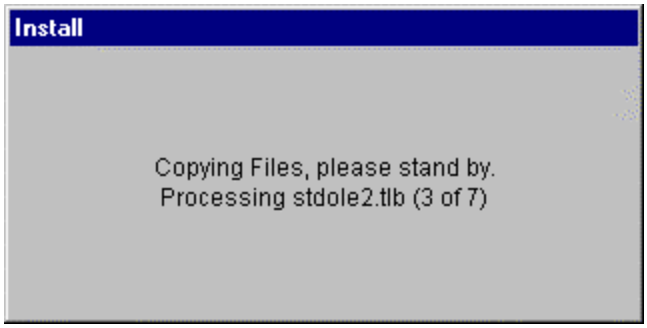

Figure 3 First Installation Screen

4. In some cases, you will see Figure 4 next. If you do, click "OK" and the program will update necessary system files on your computer. When this is complete, you will need to reboot your computer in order to continue with installation.

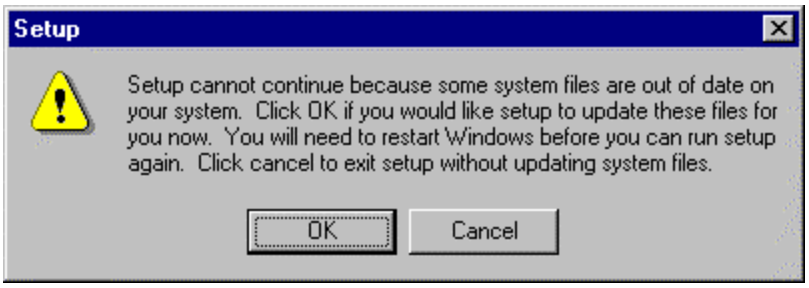

Figure 4 System File Update Screen

5. If at this point, you see a screen informing you that you need to install Microsoft Access™ 2000, see the Microsoft Access™ section on page 11.

6. The screen in Figure 5 should appear reminding you to close any open applications. You may see a different screen if *VALE 2000* finds an application still running that is a known conflict. (Leaving these applications open during installation may keep the program from installing all the files *VALE 2000* needs for its computations.) Click the "OK" button.

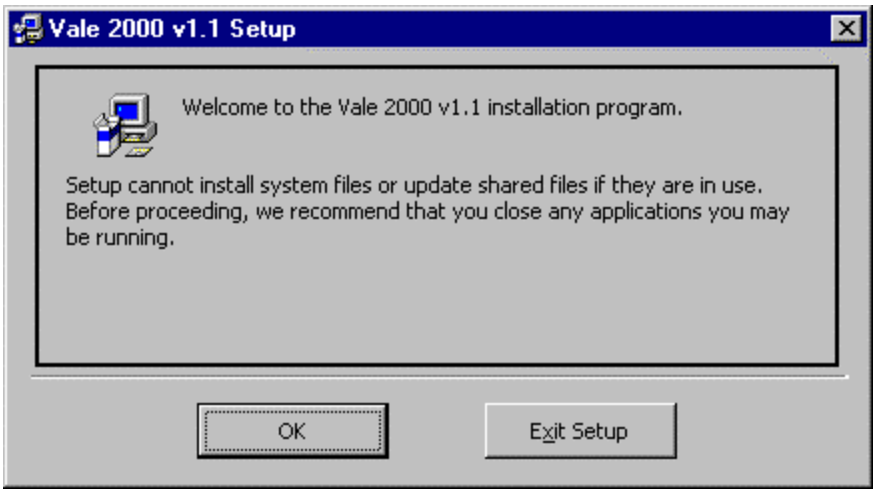

Figure 5 Setup Introduction

7. Next, a prompt for the path in which to install the system appears, as shown in Figure 6. The default path displays, and should suffice for most situations. However, you may select a different path by pressing the "Change Directory" button. Once you are satisfied with the path, press the installation icon.

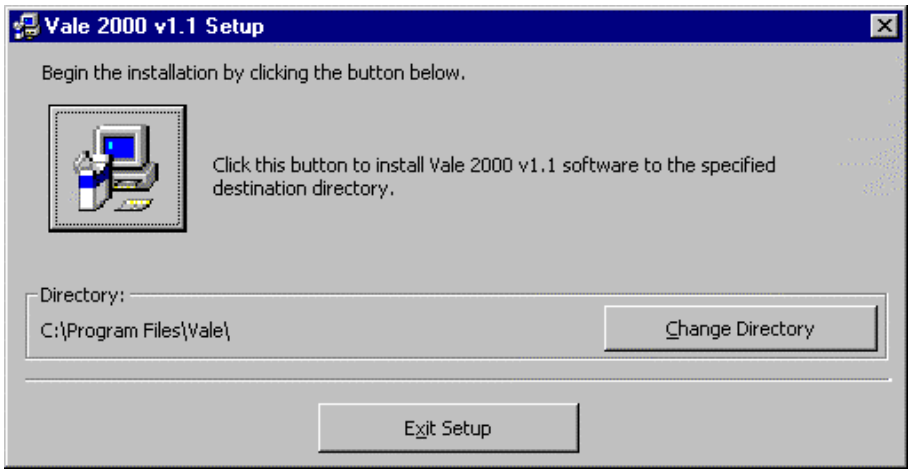

Figure 6 Setup Path Selection

8. The program next adds a new item to the program group on your computer (Figure 7). Click "Continue."
9. Figure 8 will appear to inform you of the progress of the installation.
10. When installation is complete (Figure 9), restart your computer.

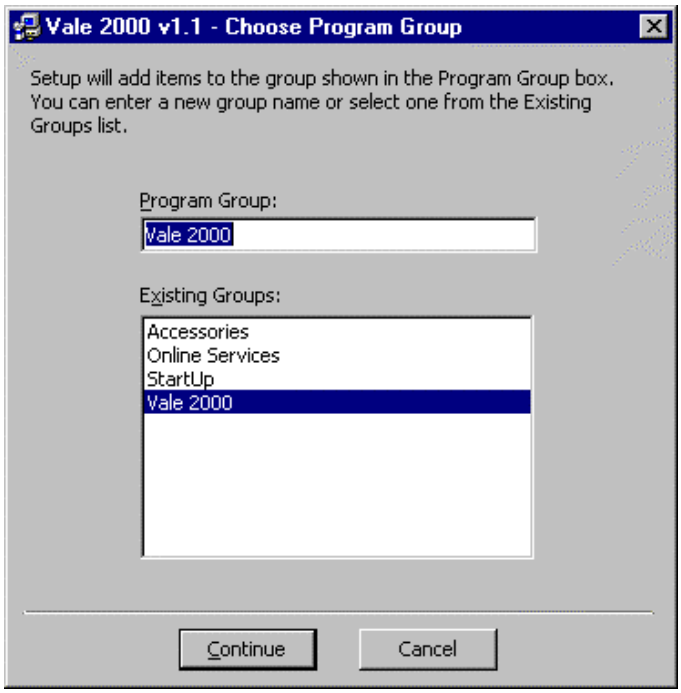

Figure 7 Choose Program Group

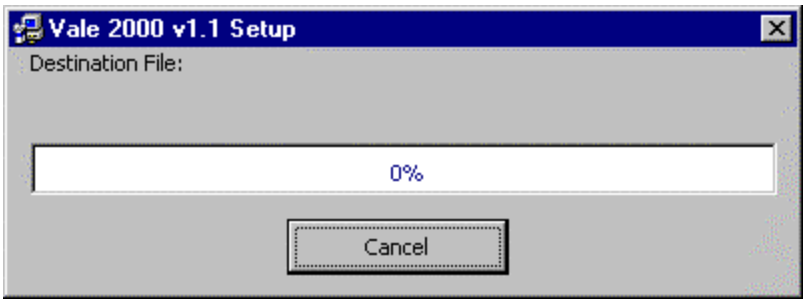

Figure 8 Setup Progress Screen

Figure 9 Setup Complete Screen

Microsoft AccessÔ

VALE 2000 relies upon data structures and relationships common in database management systems. In fact, the underlying engine that runs *VALE 2000* is Microsoft Access™ 2000. However, you do not need to own Microsoft Access™ to use *VALE 2000*. The setup process installs a *runtime* version of Access™ for you. This version provides all the functionality needed to run *VALE 2000*.

1. If you don't have Access 2000 installed, the following set of screens will appear following Figure 3 or Figure 4. Click “OK” to the prompt in Figure 10.

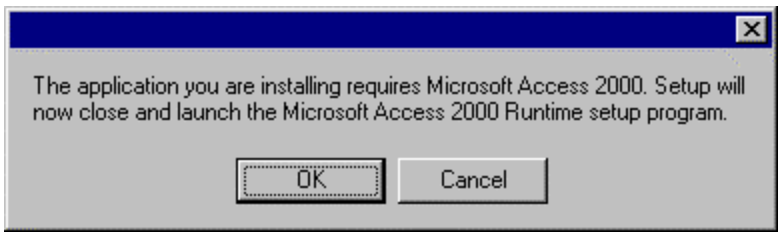

Figure 10 Accessô Setup Introduction

2. In Figure 11, choose "Install Now" and accept the defaults. Choose “Customize” only if you are a very experienced user.

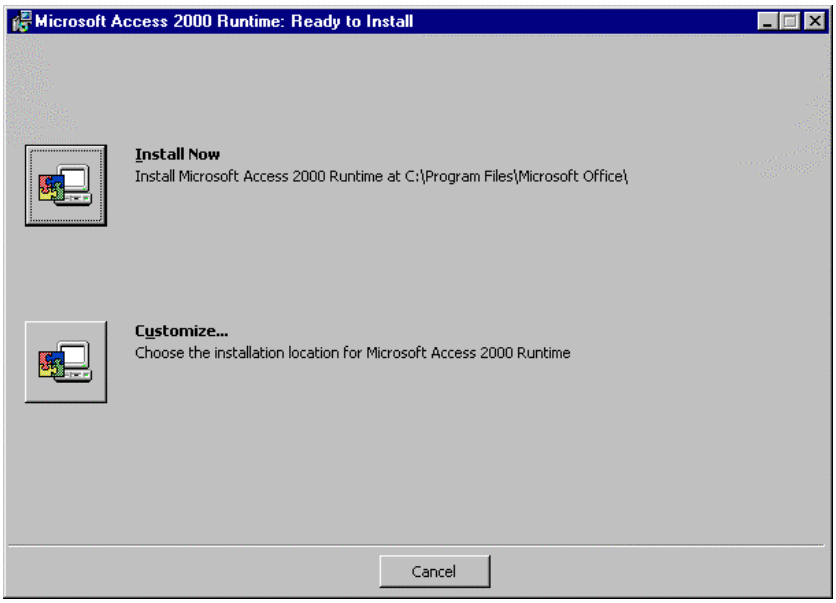

Figure 11 Ready to Install Screen

3. This will be followed by several installing and configuring screens, such as the one shown in Figure 12.

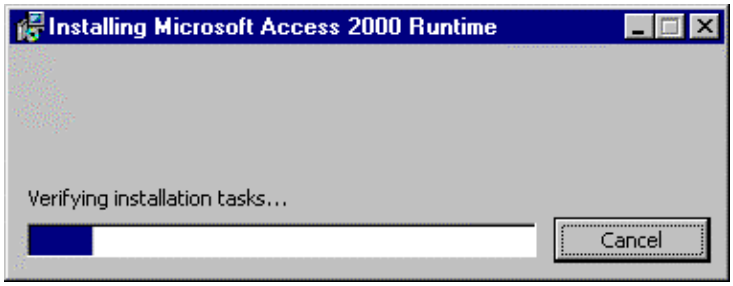

Figure 12 Installation Progress Screen

4. Click “Yes” to reboot your computer (Figure 13).

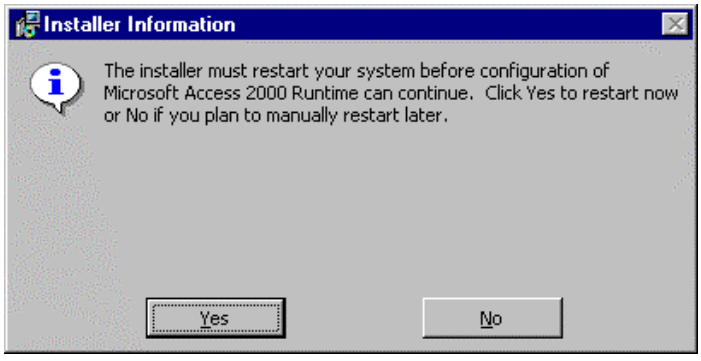

Figure 13 Installer Information

5. You will see Figure 14 informing you of the progression of the runtime installation. When this is complete, you will continue with the *VALE 2000* program installation in Figure 5.

Figure 14 Runtime Installation Progression

Removal

In the event that you need to remove *VALE 2000* from your computer, do not simply delete the files in the program path. This will not completely remove all components of the system. Instead, follow the steps outlined below.

➢ ***VALE 2000* Removal**

1. From the Windows™ Control Panel, choose "Add/Remove Programs." The Windows™ Add/Remove Programs Properties window displays.
2. Choose *"VALE 2000 "* and press the "Remove" button.
3. When asked if you are sure, press the "Yes button.
4. When the removal program finishes, restart your computer.

This process leaves the data files in the *VALE 2000* program path. If you are sure you will not need these, you may manually delete them also.

Chapter 3 Occupational Disability Definition

Both the Worklife Expectancy and the Earning Capacity sections of the *VALE 2000* program allow you to select parameters based on disability status. The program uses the definition of occupational disability as defined by the US Department of Commerce, Bureau of the Census.[1] In this definition, a person is considered to have a work disability if one or more of the following conditions are met:

Not Severely Disabled:

1. Identified by the March Supplement question "Does anyone in this household have a health problem or disability which prevents them from working or which limits the kind or amount of work they can do?"

2. Identified by the March Supplement question "Is there anyone in this household who ever retired or left a job for health reasons?"

3. Received VA disability income in previous year.

Severely Disabled:

4. Identified by the core questionnaire as currently not in the labor force because of a disability that is expected to last for at least six months.

5. Identified by the March Supplement as a person who did not work at all in the previous year because of illness or disability.

6. Under 65 years old and covered by Medicare in previous year.

7. Under 65 years old and received Supplemental Security Income (SSI) in previous year.

[1] This definition can be found on the Census Bureau web site at http://www.census.gov/hhes/www/disable/cps/cpsworkd.html

Part II Entering Your Data

Chapter 4 Managing Cases

VALE 2000 saves all of the cases you enter, and each one can be modified, copied, or deleted. The Control Center appears when you first open *VALE 2000* and consists of the Case Select tab and the Maintenance tab. You use the Case Select form in the Control Center to start a new case or to perform functions on existing cases. In addition, once all the data on a case have been entered, use the Print button on the Case Select form to print or display the final reports. You can also perform maintenance functions using the Maintenance tab in the Control Center.

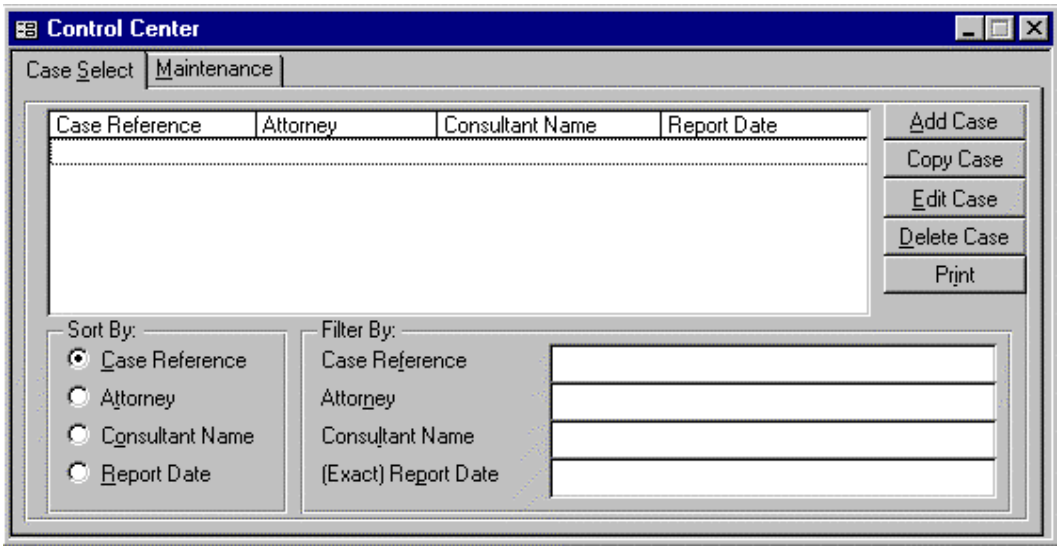

Figure 15 Control Center

Using the Case Select Form to Manage Your Cases

Here are the key features of the Case Select form:

Case Reference list - This box lists cases that have been previously entered. You can select any case from this list to copy, edit, delete, or print.

Sort by . . . option buttons - You can use these buttons to alter the order in which cases appear on the Case Reference list.

Filter by . . . text boxes - You can use these boxes to select a subset of your cases to appear on the Case Reference list.

Add Case button - You can use this button to go to a blank case form to enter data on a new case.

Copy Case button - Once a case is highlighted, you can use this button to create a duplicate of the case.

Edit Case button - Once a case is highlighted, you can use this button to go to the Case form where you can view and edit the data.

Delete Case button - Once a case is highlighted, you can use this button to delete it from *VALE 2000*.

Print button - Once a case is highlighted, you can use this button to go to the Print Dialog form where you can view or print final reports.

Each of these functions is described in detail below.

Adding a New Case

➢ **To add a new case**

1. Click on the Add Case button **or** press ALT-A **or** press ENTER when the Add Case button has focus.

2. Complete the Case form as described in the next chapters.

Selecting an Existing Case

➢ **To select an existing case from a list of cases**

1. Move the mouse pointer down the list until the case you want has focus. Use the scroll bar and buttons on the right side of the window if necessary to show more cases.

2. Click anywhere on the highlighted case.

Sorting

The list in the Case Reference box contains the following information about your existing cases: Case Reference, Attorney, Consultant Name, and Report Date. In order to

simplify case selection, you may sort the list by any of these four criteria. Select the one you want by clicking on the appropriate Sort by . . . option button.

Note: Sorting occurs by the first letter in the field and, therefore, will be most useful if you enter all client names last name first, e.g. Jones, John. If you enter names like John Smith, they sort by first name instead of last name. Also, use a consistent rule for entries in the Case Reference field, like Attorney/Client (e.g. Smith/Jones), and sorting by this field will be a very easy way to find cases.

Filtering

The list in the Case Reference box contains all existing cases. To make it easier to find a case, you can display only a subset of your cases using the Filter by . . . combination and text boxes. Note that filtering the cases removes only unselected cases from display in the list; they are still in the system. To view all your cases, delete all text from all four Filter by . . . text and combination boxes.

The filter can be based on a full name like "Smith, John," or you can insert * as a wild-card anywhere in the string. Some examples: s* will list all names that begin with s, *mc* will list all names that have mc anywhere in them, and *son will list all names that end in son. If you enter a filter without a wild-card, *VALE 2000* appends the wild-card character at the end.

Note: Filters are additive. For example, if you have Smith in the Attorney box and Jones in the Consultant Name box, only cases with attorney Smith and consultant Jones display.

- **To filter all cases by a particular field**

1. Click in the text box for the field you wish to filter. Start typing the name or reference you wish to find.

- **To remove all filters and display all cases**

1. Select the text in each of the four Filter by boxes and press the DELETE **or** BACKSPACE key to delete.

Copying an Existing Case

- **To make a duplicate copy of an existing case**

1. Select the case as described above.

2. Click on the Copy Case button **or** press ENTER when the Copy Case button has focus.

3. This will open the Case form for the duplicate case, identified as a duplicate in the Case Reference field. For example, if the original case had a Case Reference of

"Smith/Jones," the copy has a Case Reference of "Copy of Smith/Jones." Once in the Case form, you can edit the Case Reference or any other field of the duplicate. See the next chapters for additional details about entering and editing data.

Editing an Existing Case

➢ **To edit an existing case**

1. Select a case as described above.
2. Click on the Edit Case button **or** press ALT-E **or** press ENTER when the Edit Case button has focus.
3. This will open the Case form for the selected case. See the following chapters for additional details about editing data.

Deleting an Existing Case

➢ **To delete an existing case**

1. Select the case as described above.
2. Click on the Delete Case button **or** press ALT-D **or** press ENTER when the Delete Case button has focus.
3. This will bring up a window asking whether you want to continue with this action. Deleting an existing case is permanent, and all of your data on the selected case will be lost if you continue. Choose Yes to continue or No to keep your data.

Printing an Existing Case

➢ **To print or display the report for an existing case**

1. Select a case as described above.
2. Click on the Print button **or** press ALT-I **or** press ENTER when the Print button has focus.
3. This will open the Print Dialog form for the existing case. See Chapter 11 for additional details about printing and displaying reports.

Maintenance Form

Use this button to access the Maintenance features of *VALE 2000*. See Chapter 8 for more information on the Maintenance features.

Chapter 5 Data Entry - Case Data

This chapter focuses on entering basic data using the Case Data tab near the top of the Case form. The forms in this section reflect the *VALE 2000* default settings. You may alter these defaults to simplify the data entry process. See Chapter 9 to learn what defaults are available, and how to alter them.

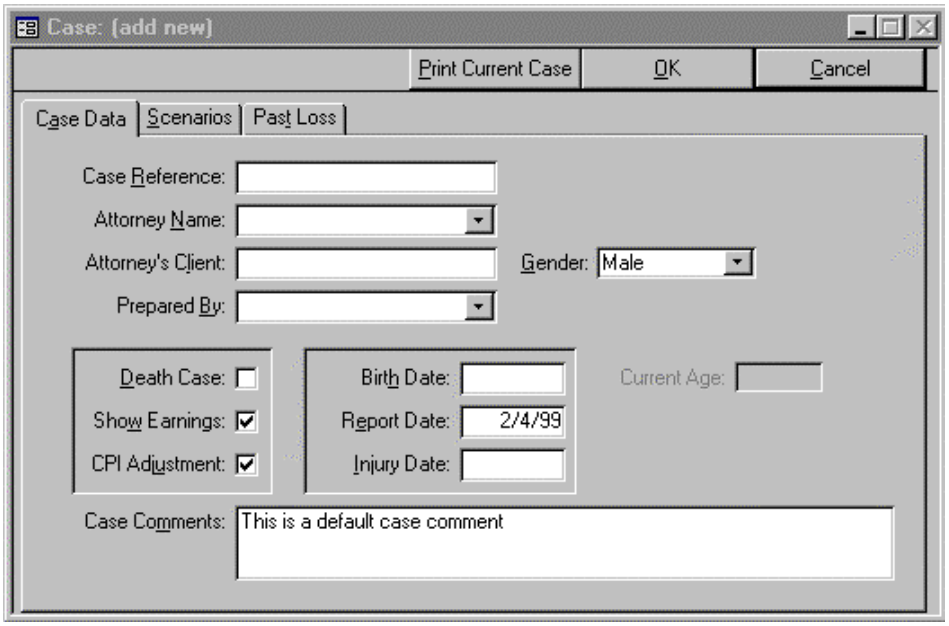

Figure 16 Case Data Form

When you add a new case, the Case Data form is displayed. Enter data on this screen as described below. Information entered in these fields is used to identify the case on reports and on the Case Select form. Use the TAB key to move quickly among the fields on the form. When done, move to the next data entry screen by clicking the Scenarios tab to continue the data entry process.

Case Reference

Type in this field the reference by which you want to refer to the case. Use a system to name cases, as this reference is available on the Case Select form to help find existing cases. One system would be to use the attorney's last name and client's last name as the Case Reference, e.g. Smith/Jones. When you are done, use the TAB key to move to the next field.

Attorney Name

If you have selected a default attorney, that name will already be in the box (see Chapter 9 for information on setting default values). If you want to use this attorney, then just press TAB again to move to the next field. If you want to change the name to a different attorney, start typing the attorney's last name. As you enter letters, the system attempts to match the letters you are typing to an existing entry in the list. If it arrives at the name you wish to use, you can stop typing and press TAB to move into the next field (the highlighted name appears in the Attorney box).

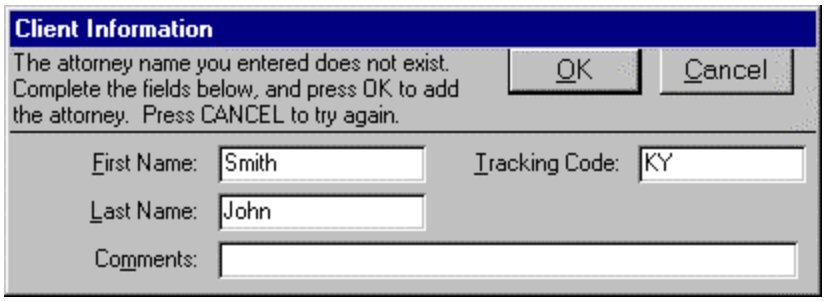

Figure 17 Attorney - Client Information Form

If there is no match, continue typing the attorney's name. When you press TAB to move out of the field, the Client Information form shown above will open, giving you the option of adding this new attorney to your attorney list.

If you click on the OK button, this name will be available in your list for this and future cases. If you click on the Cancel button, you will return to the Attorney field, and it will have returned to its previous value. Before selecting OK, make sure the name is exactly as you want it to appear on the report and in your list of attorneys.

Attorney's Client

Type the client's name in this field as you wish it to appear on the reports.

Gender

Select male or female as appropriate for the Attorney's Client. This is the field to which the life expectancy data will refer. When the box shows the correct status, press the TAB key to continue to the next field.

Prepared By

VALE 2000 allows you to have multiple experts named for your reports. You identify an expert for a particular case by selecting him or her in the Prepared By box. This box

operates exactly like the Attorney Name box. When you have finished work on this field, press TAB to move to the next section of the form.

Client Identification

In this section, you enter key information about the client and the analysis that will be used for several computations, such as life expectancy, past losses, and others.

Death Case

If the client is deceased, check this box by clicking on it or by pressing the space bar when the field is highlighted.

Show Earnings

If you want the VALE runs (the assessment of labor market access and earning capacity) for this case to display dollar amounts, check this box by clicking on it or by pressing the space bar when the field is highlighted. If the box is not checked, the VALE runs will display labor market access only.

CPI Adjustment

If you want CPI adjustments on the dollar amounts in the report, check this box by clicking on it or by pressing the space bar when the field is highlighted. If the box is not checked, the program will use the dollars as entered into the program.

Birth Date

Enter the client's date of birth and press the TAB key to continue to the next field when done.

Report Date

VALE 2000 will default to the date you enter the case. If you wish to use another date, type over the date in the field. This is the date that ends the calculation of past loss and begins future loss. Also, if you have the CPI Adjustment box checked (see above), dollars will be adjusted to the year of the report date.

Injury Date

Enter the client's date of injury and press the TAB key to continue to the next field.

Case Comments

Use this field to enter any description or information about this case, up to 255 characters. These comments will be displayed on the Case Summary report.

Chapter 6 Data Entry - Scenarios

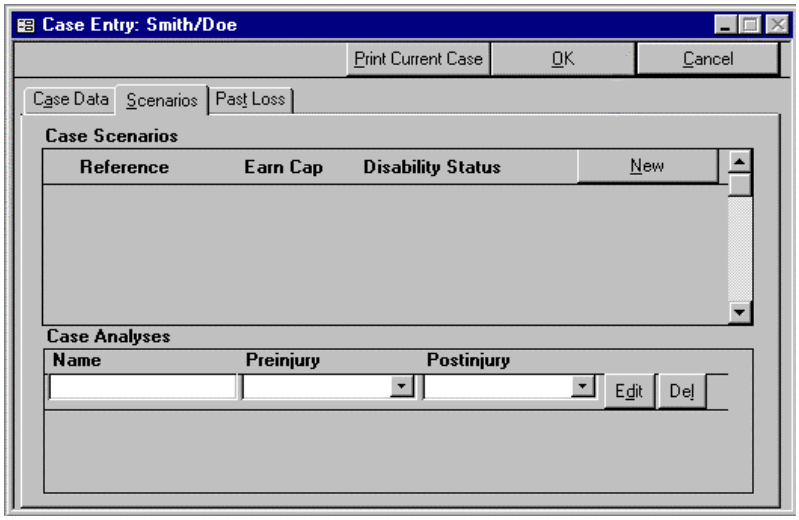

Figure 18 Blank Scenario Tab

This chapter focuses on entering scenario and analysis data using the Scenario tab near the top of the Case Entry form. The Scenarios form consists of two sections, Case Scenarios, which define the earnings, worklife, and economic information necessary to perform pre-injury and post-injury assessments, and Case Analyses, which define the relationship between pre-injury and post-injury scenarios. The forms shown in this section reflect the *VALE 2000* defaults. You may alter these defaults to simplify the data entry process. See Chapter 9 to learn what defaults are available, and how to alter them.

Case Scenarios

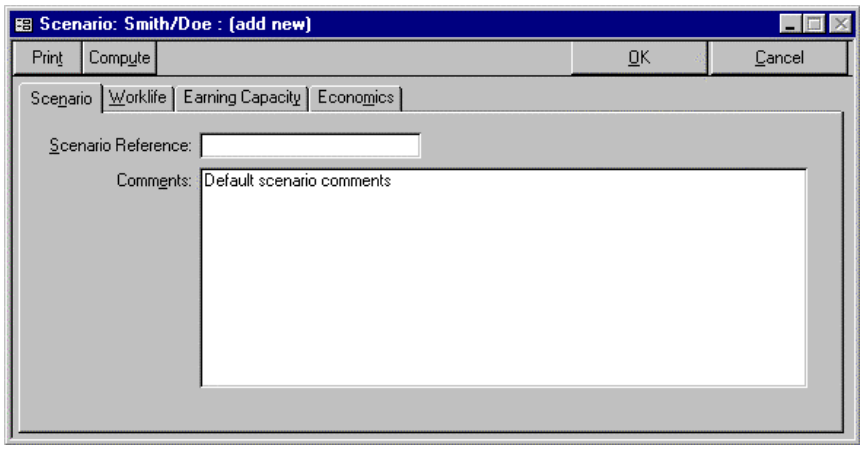

Figure 19 Scenario Reference Tab

To analyze a case, you need to define scenarios. Each scenario represents a complete pre-injury or a complete post-injury possibility for the client. To enter a scenario, click on the NEW button and Figure 19 will appear.

Scenario Tab

Scenario Reference

In this field, type a brief identifying name for the scenario (e.g., Pre-injury). When you are done, use the TAB key to move to the next field.

Comments

In this field, type whatever you wish regarding the scenario you are entering. If you use VALE to determine earning capacity, this comment will appear on the VALE printout.

Worklife Tab

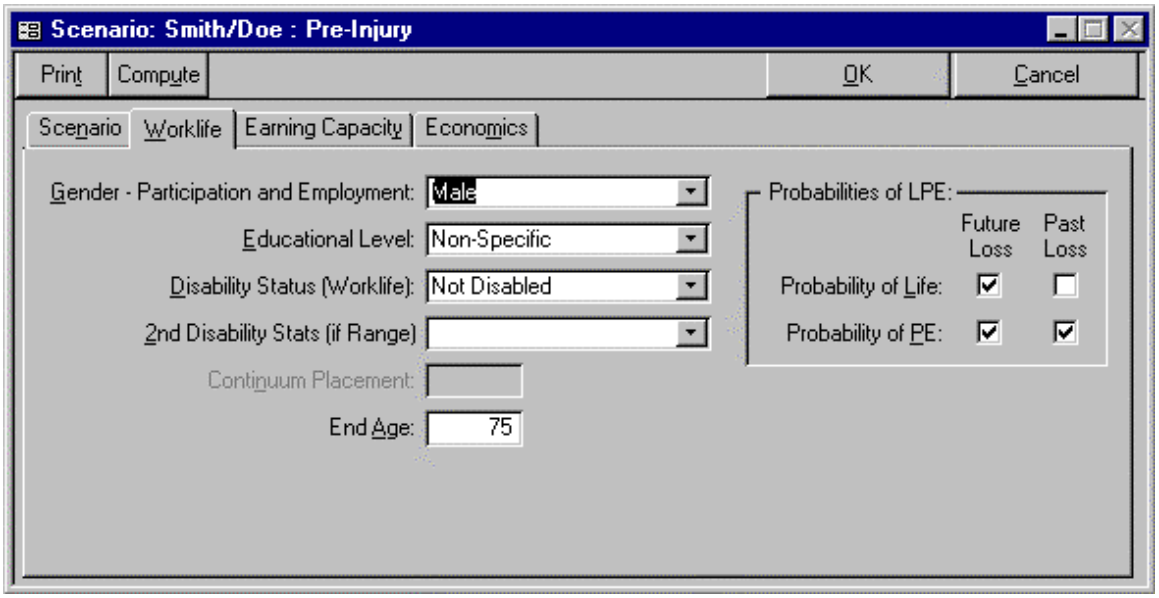

Figure 20 Worklife Tab

Gender - Participation and Employment

Select male or female as appropriate for your worklife expectancy analysis. When the box shows the correct gender, press the TAB key to continue to the next field.

Educational Level

Select the educational level you wish to use for this scenario. When the box shows the correct level, press the TAB key to continue to the next field.

Disability Status (Worklife)

Select the disability status you wish to use for this scenario. When the box shows the correct status, press the TAB key to continue to the next field.

2nd Disability Stats (if Range)

If you wish to place the client in a range between two average disability points, select the first end of the range in the Disability Status (Worklife) field and the second endpoint in the 2nd Disability Stats (if Range) field. When the two fields show the correct endpoints of your range, press the TAB key to continue to the Continuum Placement field.

Continuum Placement

This field will be unavailable for use unless you have selected a disability status in the 2nd Disability Stats (if Range) field. Enter in this field the decimal that represents the client's placement on the continuum for this scenario.

For example, if you wish to use a continuum placement that is halfway between the worklife for average not severely disabled and average nondisabled, select Disabled - Not Severely in the Disability Status (Worklife) field. Second, select Not Disabled in the 2nd Disability Stats (if Range) field. The Continuum Placement field will now be available for use. Enter this field and type in .5 to represent your halfway placement.

Remember when using this field that the higher the decimal, the higher the continuum placement. In the above example, typing .75 in this field will place the client three-fourths of the way between your two endpoints, closer to average nondisabled.

When the box shows the desired placement, press the TAB key to continue to the next field.

End Age

In this field, type the age at which you want the worklife expectancy calculation to end. *VALE 2000* ships with a default age of 90, the highest age currently available. Typing 90 will take the analysis through age 89 and will end on the client's 90th birthday.

Probabilities of LPE

In this field, you choose how you want the worklife expectancy calculated in terms of the probabilities of life, participation, and employment (see Chapter 18 for an explanation of these calculations). If a box is checked, the program will calculate the value of the field. For example, *VALE 2000* ships with all boxes checked except for the past loss Life box. This represents a typical analysis for a non-death case. Since we know that the client is still living, we do not wish to calculate the probability of life for the past loss, but do want to calculate the probability of life for the future loss. If you wish to calculate a full worklife expectancy to the End Age, then remove all four checks. The program will then calculate the lifetime loss assuming no reduction in worklife expectancy attributable to the probabilities of life, participation, and employment.

Earning Capacity Tab

Earnings Source

This field has three options, Other, Education, and VALE. *VALE 2000* provides values for the Education (national averages) and VALE options. If you wish to use a dollar from another source, such as actual earnings, choose the Other option from this list. When the box shows the desired earnings source, press the TAB key to continue to the next field.

Earnings Source - Other

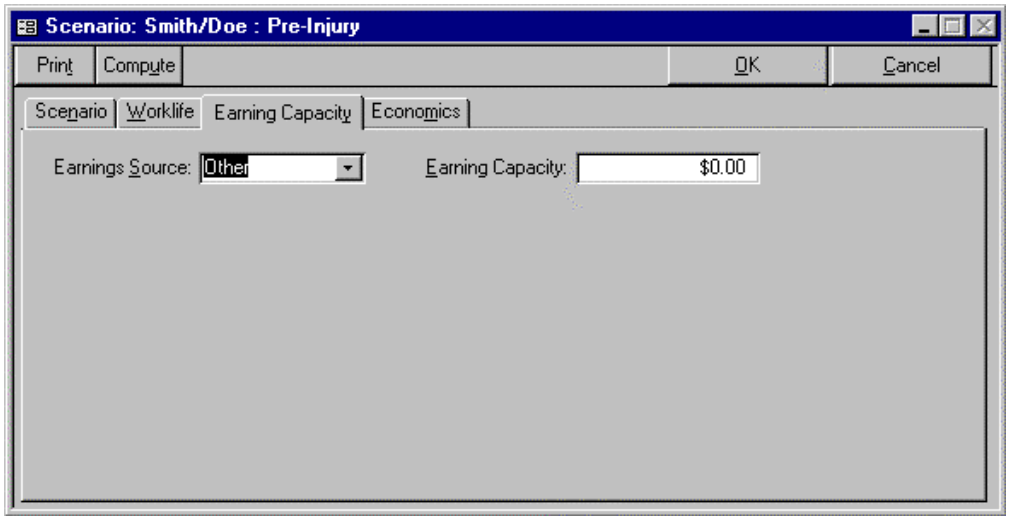

Figure 21 Earning Capacity Tab - Other

Other - Earning Capacity

If you have chosen the Other option in Earnings Source, the only field available will be Earning Capacity. Enter into this field the value you wish to use for the client's annual earnings.

Earnings Source - Education

If you have chosen the Education option in Earnings Source, other fields will become available to you.

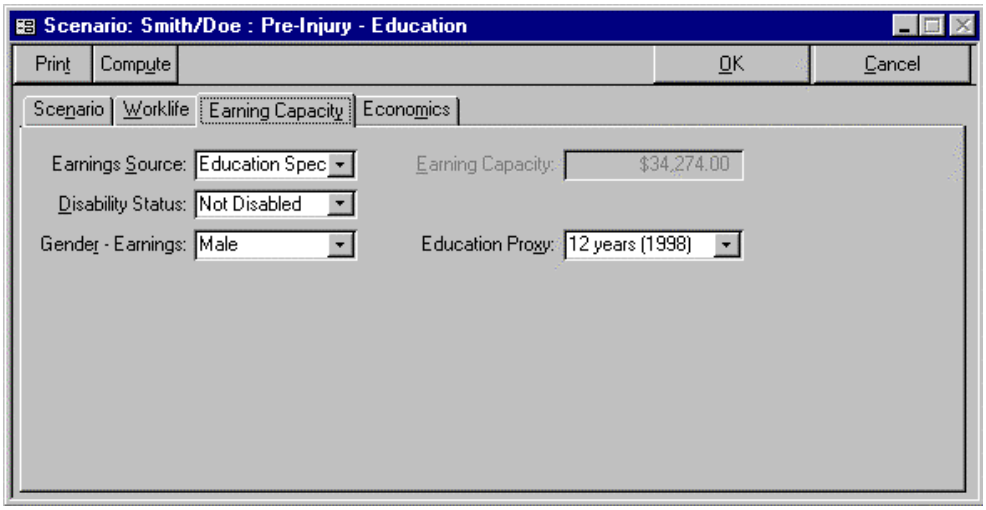

Figure 22 Earning Capacity Tab - Education

Education - Disability Status

Select the disability status you wish to use for the education dollars in this scenario. When the box shows the desired status, press the TAB key to continue to the next field.

Education - Gender - Earnings

Select the gender you wish to use for the education dollars in this scenario. When the box shows the desired gender, press the TAB key to continue to the next field.

Education - Education Proxy

Select the educational level you wish to use for the education dollars in this scenario.

Earnings Source - VALE

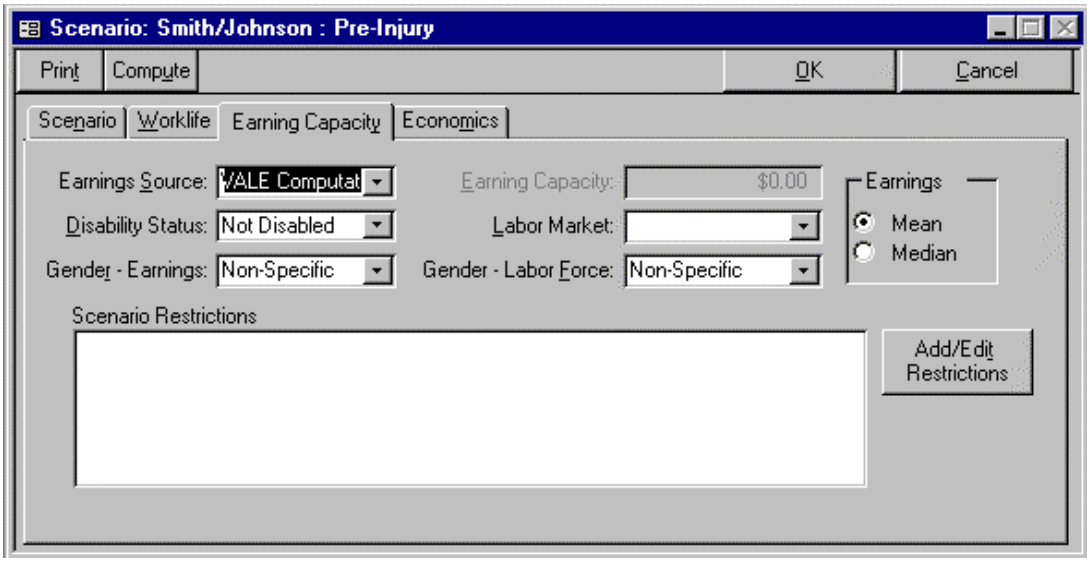

Figure 23 Earning Capacity Tab - VALE

VALE - Disability Status

Select the disability status for the dollars you wish VALE to use in this scenario. When the box shows the desired status, press the TAB key to continue to the next field.

VALE - Gender - Earnings

Select the gender for the dollars you wish VALE to use in this scenario. When the box shows the desired gender, press the TAB key to continue to the next field.

VALE - Labor Market

Select the labor market you wish VALE to use in this scenario. When the box shows the desired region, press the TAB key to continue to the next field.

VALE - Gender - Labor Force

Select the gender for the labor force you wish VALE to use in this scenario. Selecting Non-Specific will look at all jobs in the labor market, whereas selecting female, for example, will look at only those jobs held by women. When the box shows the desired gender, press the TAB key to continue to the next field.

VALE - Earnings

Select the average earnings measure you wish VALE to use. When the box shows the desired status, press the Add/Edit Restrictions button to continue input for this scenario.

VALE - Add/Edit Restrictions

Press this button to go to the form that will allow you to select the Worker Characteristics for the scenario.

Scenario Restrictions

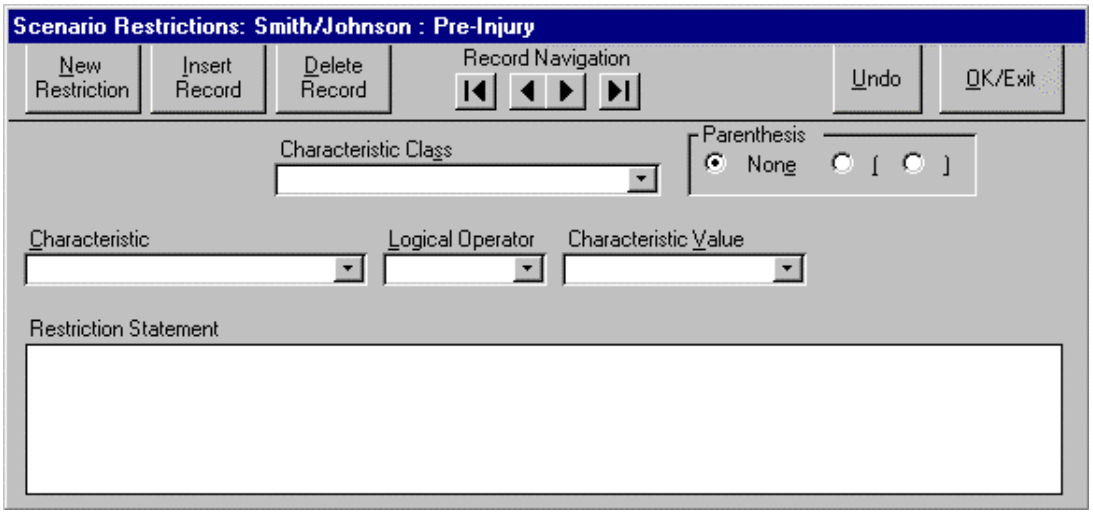

Figure 24 Scenario Restrictions Form

VALE - Characteristic Class

Select the Characteristic Class you wish to use for this scenario. See Chapter 16 for an outline and explanation of these classes. When the box shows the desired class, press the TAB key to continue to the next field.

VALE - Characteristic

Select the Characteristic you wish to use for this scenario. See Chapter 16 for an outline and explanation of these characteristics. When the box shows the desired characteristic, press the TAB key to continue to the next field.

VALE - Logical Operator

Select the Logical Operator that is appropriate for this scenario. When the box shows the desired operator, press the TAB key to continue to the next field.

VALE - Characteristic Value

Select the Characteristic Value that is appropriate for this scenario. See Chapter 16 for an outline and explanation of these values. At this point, if you are finished entering characteristics for your scenario, press the OK/Exit button. If you wish to enter additional characteristics, press the TAB key or the New Restriction button to bring up a new form.

At times, you may wish to enter a range of values that lies in the middle of the total range for that characteristic. For example, you may wish to do a run looking at jobs requiring an SVP of 3, 4, 5, or 6. To do this, select Between in the Logical Operator field. When you do this, a second Characteristic Value will appear. Select 3 in the first value field, and select 6 in the second. Note that this operation includes the endpoints you have selected.

VALE - Record Navigation

These arrows allow you to move through the characteristics you have entered for this scenario. To move backward or forward one record, click the left or right arrow in the center of the navigation field. If you wish to move to the first or last characteristic entered, press the left or right arrow with the vertical line.

VALE - New Restriction Button

Once you are finished entering information for one characteristic and you wish to enter additional characteristics, press either the TAB key or the New Restriction button to bring up a new form.

VALE - Insert Record Button

If you wish to enter a new characteristic between two existing characteristics, press the Insert Record Button. This will bring up a new form that will be placed before the record you were on when you pressed the button.

VALE - Delete Record Button

If you wish to remove the characteristic that is currently on the form, press the Delete Record Button. This will permanently remove it from consideration in your VALE run.

VALE - Parenthesis

Use this field if you wish to group your characteristics in a particular way. Use this field with caution. Most of what you wish to do can be accomplished using the fields already available on the form (see Characteristic Value section above).

VALE - Restriction Statement

You cannot enter data into this field. For your verification, the characteristics you have chosen will appear in this field as you finish them.

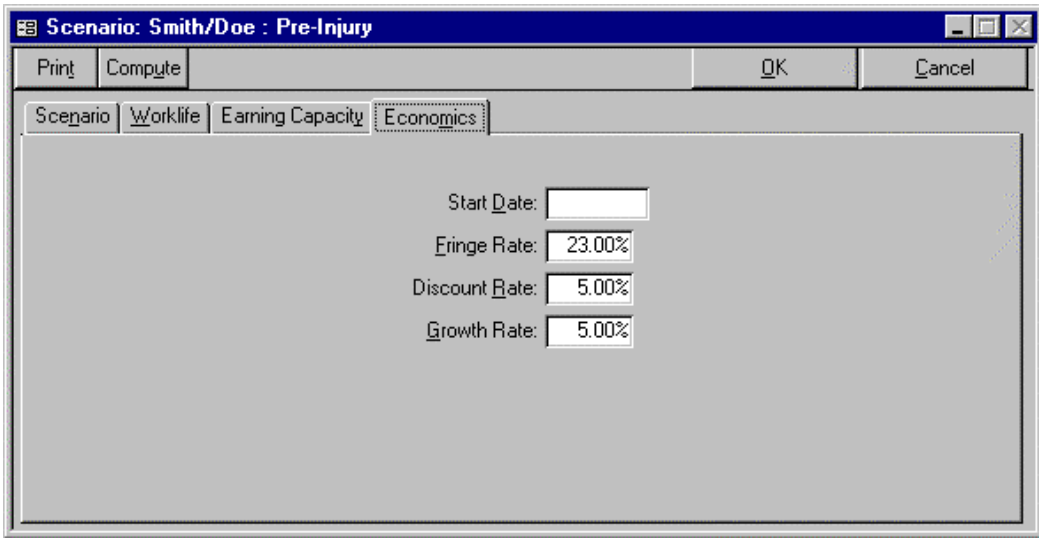

Figure 25 Economics Tab

Economics Tab

Start Date

If you leave this field blank, the analysis of future losses will begin on the report date. In some cases, children for example, you may need to start the analysis at some point in the future. To do this, type the date you want the analysis to begin (e.g., the child's 18th birthday). Note that you cannot enter a date in this field if you also want to calculate past loss.

Fringe Rate

VALE 2000 ships with the current national average for fringe benefits published by the US Department of Labor in the Employer Cost for Employee Compensation. You may change this to zero if you wish or enter any other fringe benefit rate. Enter the rate as a decimal.

Discount Rate

Enter in this field the discount rate you wish *VALE 2000* to use in its calculation of lifetime loss. If you do not want to consider a discount rate, change the rate to zero. Enter the rate as a decimal.

Growth Rate

Enter in this field the growth rate you wish *VALE 2000* to use in its calculation of lifetime loss. If you do not want to consider a discount rate, change the rate to zero. State the rate as a decimal.

Manipulating Scenarios

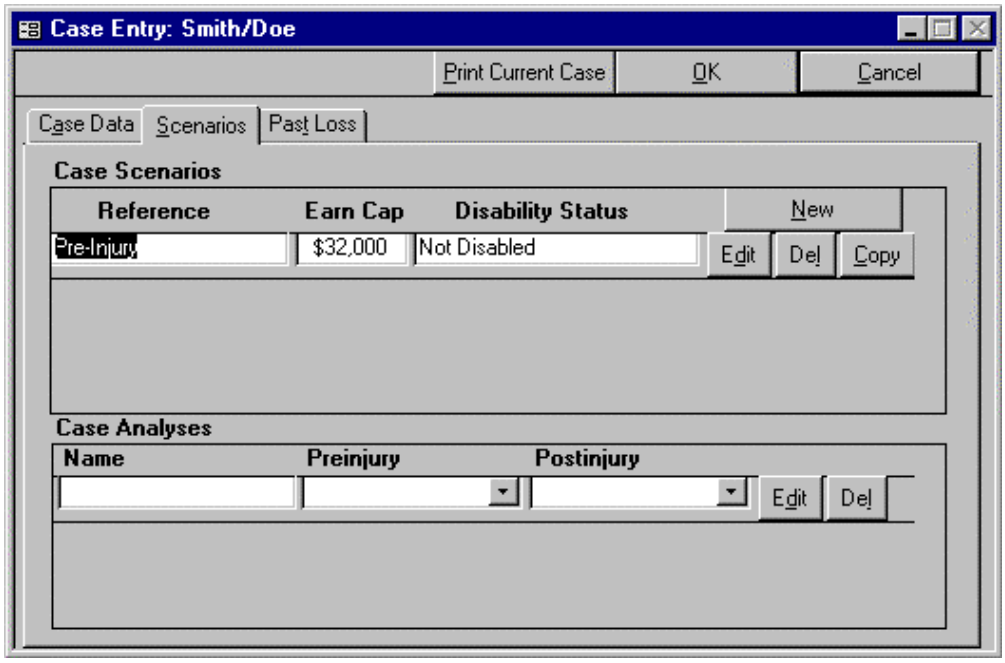

Figure 26 Scenario Tab

Once you have completed entering information for your scenario, the Scenario form will appear similar to the picture above. At this point, you may press the NEW button to enter a second scenario. If, however, you wish to change the existing scenario in some way, click the EDIT button next to the scenario name. This will take you back into the scenario entry screens for editing. If you decide you no longer need a particular scenario for your case, click the DEL button next the scenario name you wish to delete. At times, you will want to enter an additional scenario that is similar in most ways to one already entered. In this case, click the COPY button next to the original scenario. This will bring up a copy of the scenario that you can then EDIT as desired.

Case Analyses

Once you have set up the pre-injury and post-injury scenarios for your case, you are ready to set up the analyses. This is simply an identification of which pre-injury or post-injury scenarios go together to make a complete analysis.

Name

Enter the name by which you want to identify the analysis. For a case with one analysis, a name as simple as "Analysis" could be sufficient. Otherwise, a more specific name is recommended.

Pre-injury

In this field, select the scenario you want to use as pre-injury for the Name you entered by choosing it from the drop down list or typing the name in the field.

Post-injury

In this field, select the scenario you want to use as post-injury for the Name you entered. If the case is one of death or total disability, skip this field and enter nothing.

EDIT and DEL buttons

Once an analysis is set up, you may use these buttons to edit them or to delete them as desired.

Chapter 7 Data Entry - Past Loss

This chapter focuses on entering past loss data using the Past Loss tab near the top of the Case Entry form. The form shown in this section reflects the *VALE 2000* defaults. You may alter these defaults to simplify the data entry process. See Chapter 9 to learn what defaults are available, and how to alter them.

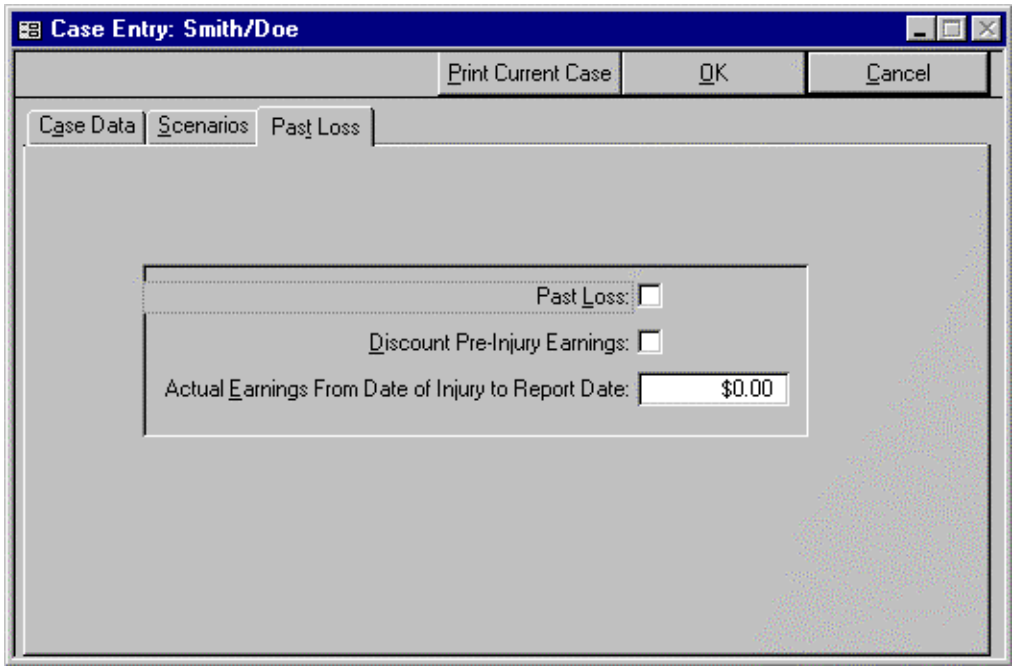

Figure 27 Past Loss Form

Past Loss

If you wish to calculate past loss for your case, activate this field by clicking on the Past Loss box or by pressing the SPACE BAR when the field is highlighted. When this box is activated, *VALE 2000* will calculate loss of past earnings from the date of injury to the report date.

Discount Pre-Injury Earnings

If you wish to discount the past loss, activate this field by clicking on the box or by pressing the SPACE BAR when the field is highlighted. See Chapter 19 for a description of the calculation.

Actual Earnings From Date of Injury to Report Date

When calculating past loss, type in this field the total amount earned by the client from the date of injury to the report date. Note that for accuracy, this should be stated in terms of current dollars (or a value consistent with your pre-injury earning capacity) and should include fringe benefits if benefits were included pre-injury.

Chapter 8 Maintenance

VALE 2000 ships with blank tables of Attorneys and Consultants, which expand as you enter cases, and other data tables with some values preloaded. Use the Maintenance tab to open these tables to make changes or additions. You can also open any of these tables using the icons at the top of the screen just below the menu bar (see Figure 46). Hold your cursor over an icon to see which table it opens.

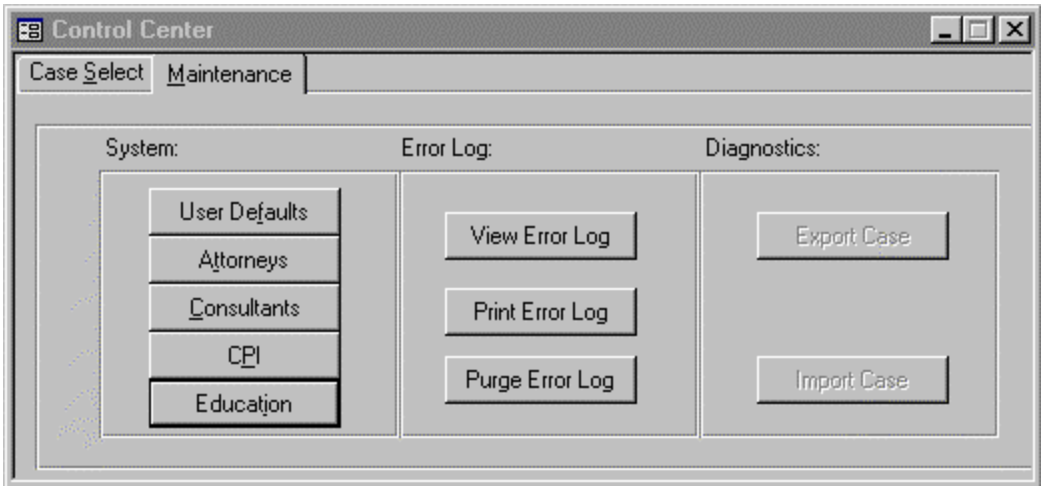

Figure 28 Maintenance Tab

Defaults

Click on the User Defaults button on the Maintenance form or the Options/Defaults icon under the menu bar to open the User Default Entry form. This form and user defaults are discussed in detail in Chapter 9.

Attorneys

Click on the Attorneys button on the Maintenance form or the Attorneys icon under the menu bar. This will open the Attorneys form, which shows a list of first and last names of the attorneys you have entered in your cases. Use the scroll bar to find the one you want. You may edit any of the names. Note that any changes you make will appear in all reports for cases using that attorney. You can also add a new attorney by typing the name in the last row of the table.

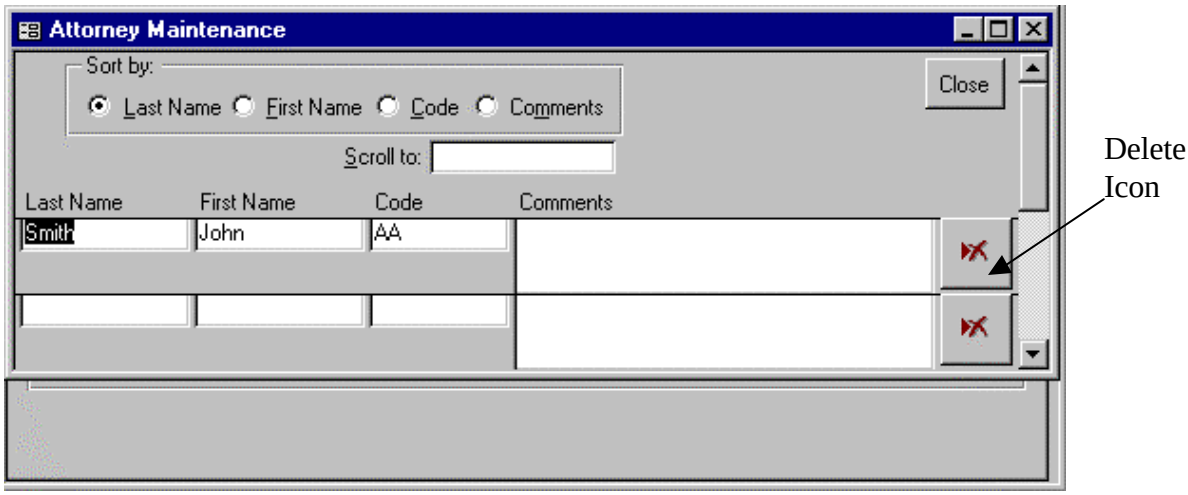

Figure 29 Attorney Form

Each row includes a delete icon, which you can use to delete the attorney on that row. Note that if the attorney name is used in any of your cases, an error message will appear, and you will be unable to delete that attorney until the cases in which he or she appears are deleted (see page 20 for information on deleting cases).

When finished with the Attorney form, click on the Close button to return to the Maintenance form.

Consultants

The Consultants form operates just like the Attorneys form. Please refer to that section (above) for details.

CPI

Open the CPI Maintenance form by clicking on the CPI button on the Maintenance form or the Consumer Price Indices icon under the menu bar. *VALE 2000* defaults are the indices from 1971 through the most recent year. If you use the system's CPI adjustment feature (see page 23), you will need to update these indices when they become available and add additional years when the report date advances to a new calendar year. The indices are available on the Internet at the Bureau of Labor Statistics site (stats.bls.gov).

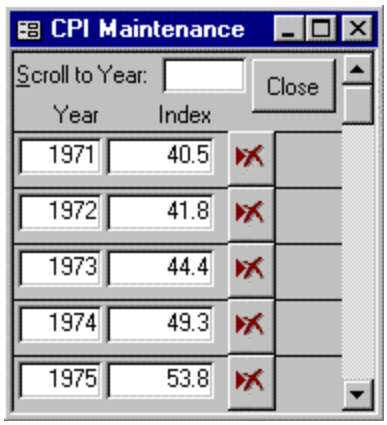

Figure 30 CPI Maintenance Form

When done with the CPI Maintenance form, click on the Close button to return to the Maintenance form.

Education

Open the Education Maintenance form by clicking on the Education button on the Maintenance form or the Education icon under the menu bar. The dollars available in *VALE 2000* are described in Chapter 20.

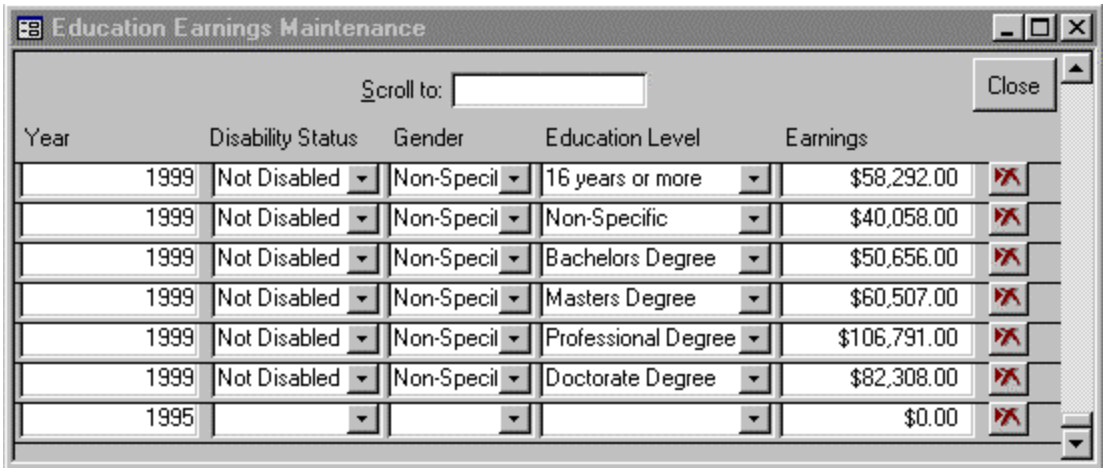

Figure 31 Education Earnings Maintenance Form

The Education Earnings Maintenance form works similarly to the Attorney form (see page 39 for details). Make your selection in each column for the year of the dollar, disability status, gender, education level, then enter the dollar in the last column. You may edit existing dollars or add dollars for new years in the blank field on the bottom of the form. Note that any changes you make will appear in all reports for cases using that category.

When done with the Education Earnings Maintenance form, click on the Close button to return to the Maintenance form.

Error Log and Diagnostics

These should be used if necessary following contact with Vocational Econometrics technical personnel. They may not be available to users of the current version of *VALE 2000*.

Chapter 9 Defaults

VALE 2000 allows you to simplify the data entry process by setting many of the data entry fields to default values. When you open a new case, these fields will be preset to the default values you set. If the values are correct for this case, you can continue to the next field. If not, you can make the needed changes.

Use the User Defaults form to change default values for future cases. (Note that changing default values does not change any data in existing cases. It alters only the default values that will appear when you next open the Case form for a new case). Click on the User Defaults button on the Maintenance form or the Options/Defaults icon under the menu bar to open the User Defaults form. There are six tabs across the top of the User Defaults form that access six different screens. A detailed description of these six screens follows.

When you are done with the User Defaults form, click on the OK button to accept the changes and return to the Maintenance form. If you click OK, the new default values will appear when you start a new case. Click on the Cancel button to disregard the changes and return to the Maintenance form. If you click Cancel, any changes made to the default values will be lost.

Case ID Tab

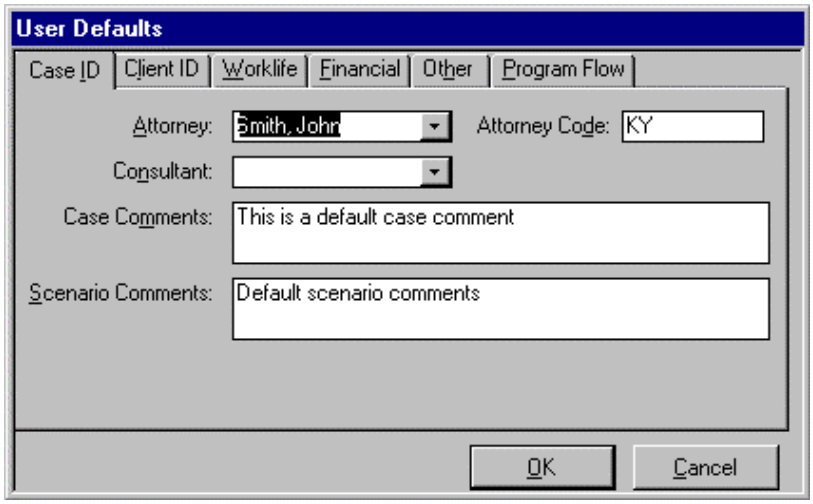

Figure 32 User Defaults Form - Case ID Tab

Attorney

VALE 2000 ships with no default set for attorney. If you do most of your work for one attorney, you may find it helpful to use his or her name as the default value for this field on the Case Data form. To select a default attorney, click on the arrow to the right of the field and select an attorney from the drop down list that appears. If the name you want to use does not appear on the list, you can use the Maintenance feature to add the name to your Attorneys table, and then it will be available to you on this list. (See page 39 for information about adding a new attorney.)

Consultant

This default operates in the same manner as the Attorney default.

Case Comments and Scenario Comments

You can use these to add default comments for your cases or scenarios if desired.

Client ID Tab

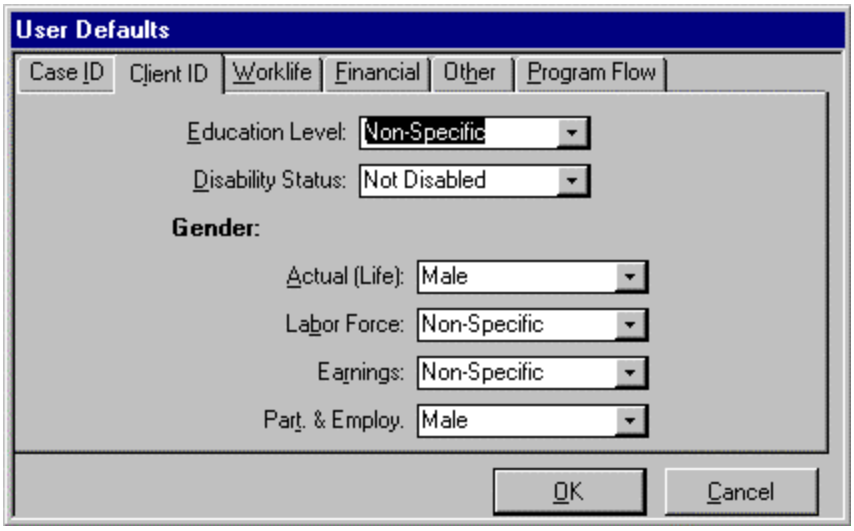

Figure 33 User Defaults Form - Client ID Tab

Education Level

VALE 2000 ships with a default value of Non-Specific. If you do most of your work with clients at a specific education level, you may find it helpful to use this level as the default value for this field on the Worklife form. To select a default education level, click on the arrow to the right of the field and select the level from the drop down list that appears.

Disability Status

The *VALE 2000* default for Disability Status is Not Disabled. To select a different default, click on the arrow to the right of the field and select the disability status from the drop down list that appears.

Gender - Actual (Life)

The *VALE 2000* default for this field is Male. You may select male or female as the default value for the calculation of life expectancy in the Worklife Probability calculation. To select a different default, click on the arrow to the right of the field and select the desired gender from the drop down list that appears.

Gender - Labor Force

The *VALE 2000* default for the labor force gender is Non-Specific. You may select a default value for the gender you wish VALE to use when calculating the number of people employed in a specific labor market (see also page 31). To select a different default, click on the arrow to the right of the field and select the desired gender from the drop down list that appears.

Gender - Earnings

The *VALE 2000* default for the earnings gender is Not Specific. You may select a default value for the gender you wish VALE to use when calculating earning capacity. To select a different default, click on the arrow to the right of the field and select the desired gender from the drop down list that appears.

Gender - Participation and Employment

The *VALE 2000* default for this field is Male. You may select a default value for the gender you wish Worklife Probability to use when calculating worklife expectancy. To select a different default, click on the arrow to the right of the field and select the desired gender from the drop down list that appears.

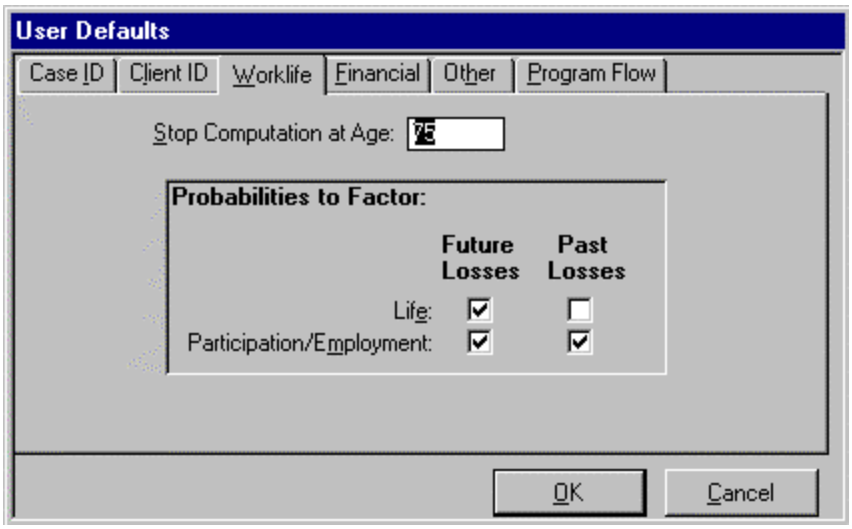

Figure 34 Use Defaults Form - Worklife Tab

Worklife Tab

Stop Computation at Age

The default value for this field is 90 (data on participation and employment are available through age 89). Worklife Probability will calculate worklife expectancy to the birthday listed in this box.

Probabilities to Factor

Worklife Probability has the ability to calculate worklife expectancy by independently using or ignoring the life factor and the participation and employment factor for past and for future losses. If a given box is checked, Worklife Probability will include that factor in its calculations.

Financial Tab

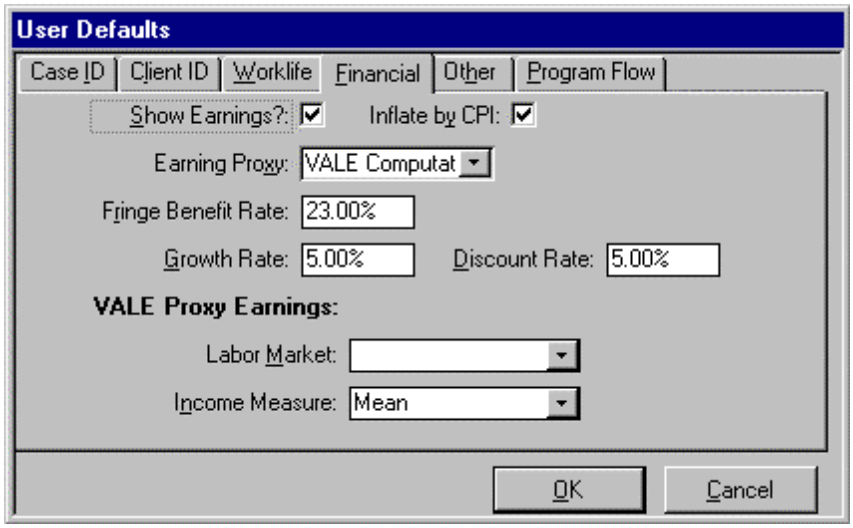

Figure 35 User Defaults Form - Financial Tab

Show Earnings

If this box is checked (the default value), then VALE will display the earning capacity for your run. If it is not checked, the program will display labor market access only.

Inflate by CPI

If this box is checked (the default value), then VALE will update the labor market dollars to the year of your report date using the CPI. If it is not checked, the program will display dollars for the chosen labor market without updating.

Earning Proxy

You can use this field to select the earning capacity type you usually use in your calculations. To select a different default, click on the arrow to the right of the field and make your selection from the drop down list that appears.

Fringe Benefit Rate

You can enter in this field a fringe benefit rate of your choice. The default is the current national average rate based on the Employer Costs for Employee Compensation available from the Bureau of Labor Statistics.

Growth Rate and Discount Rate

You can enter in these fields your preferred growth and discount rates. Rates must be entered as a decimal; thus, 5% is entered in the field as .05.

VALE Proxy Earnings - Labor Market

You can leave this field blank or use it to select the labor market you usually use in your calculations. To select a different default, click on the arrow to the right of the field and make your selection from the drop down list that appears.

VALE Proxy Earnings - Income Measure

You can use this field to select the mean or median income measure you wish VALE to use in its calculation of earning capacity. To select a different default, click on the arrow to the right of the field and make your selection from the drop down list that appears.

Other Tab

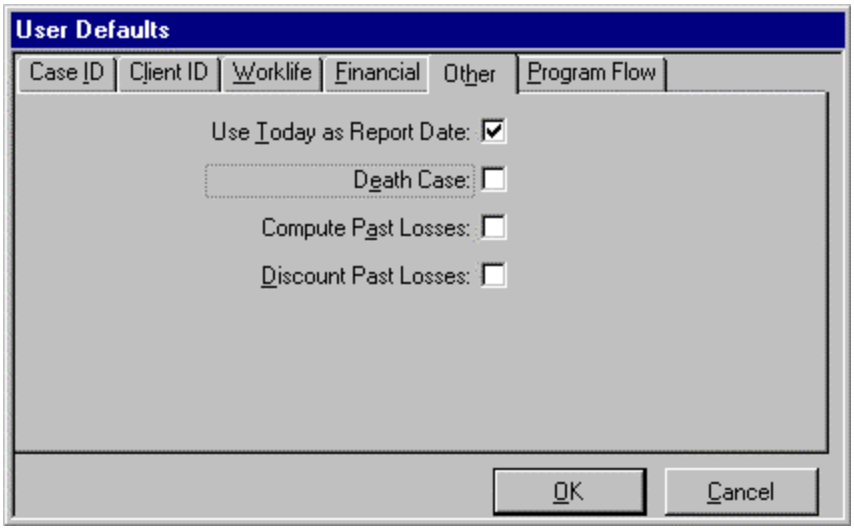

Figure 36 User Defaults Form - Other Tab

Use Today as Report Date

If this box is checked, then the date you enter the case will be the date used as the report date. This is the date at which the past and future losses are split. In addition, if you choose the CPI Adjustment feature for your VALE or education runs, the earnings will be adjusted to the year of your report date.

Death Case

If this box is checked, then your case will be marked and calculated as a death case.

Compute Past Losses

If this box is checked, then Worklife Probability will calculate past losses (from the date of injury to the report date) in addition to the future loss.

Discount Past Losses

If this box is checked, then the past losses for your cases will be discounted.

Program Flow Tab

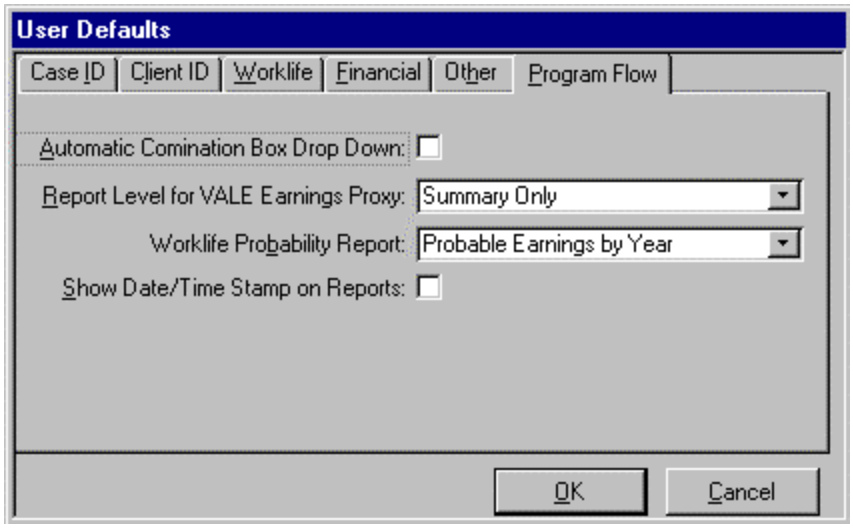

Figure 37 User Defaults Form - Program Flow Tab

Automatic Combination Box Drop Down

If this box is checked, combination boxes will automatically display the drop down list when you tab into the field.

Report Level for VALE Earnings Proxy

Use this to select the level of detail you wish VALE to print (see Chapter 13). To select a different default, click on the arrow to the right of the field and make your selection from the drop down list that appears.

Worklife Probability Report

Use this to select the type of report you wish Worklife Probability to print (see Chapter 14). To select a different default, click on the arrow to the right of the field and make your selection from the drop down list that appears.

Show Date/Time Stamp on Reports

If this box is checked, the printouts will show the date and time you ran them at the bottom of the page.

Chapter 10 Menus and Toolbars

VALE 2000 provides two tools that give you alternative ways of navigating among the various windows: pull-down menus and buttons on a toolbar. This chapter describes these features in detail. In addition, you may access maintenance and troubleshooting features using these tools.

Start Menu

Consistent with other Windows™ 9x applications, *VALE 2000* creates a start menu group to provide access to its programs. This enables you to open *VALE 2000* as well as to start some other components of the application without having the main program open. The choices available are described below.

VALE 2000

This is the main point of entry to the *VALE 2000* application. You may also provide other methods to start the program by creating a shortcut to the "VALE2000.MDE" file on your desktop or toolbar.

Compact and Repair

If used frequently, *VALE 2000's* data files will naturally expand as you add and delete data. This expansion may cause the files to be inefficiently stored on your computer's hard drive. To optimize the storage, a "Compact and Repair" option is added to your Start Menu. This routine should be run on a periodic basis -- monthly or possibly weekly for frequent users. Before starting this routine, you should exit *VALE 2000* and, if you are on a network, make sure others are not using the system either. When you select this option, the screen in Figure 38 appears.

Figure 38 Compact and Repair Screen

Choose "Do Nothing" to exit the routine without compacting. Choose "Compact Only" to compact but not repair the files. Choose "Compact and Repair" to compact and repair

the files. We recommend the "Compact and Repair" option. It adds only a small amount of time over the "Compact Only" option, and can do no harm.

ReadMe

This provides access to the "README.TXT" file, which contains updates to the manual, technical tips, and other up-to-date data. For more information, see page 8.

Menu Bar

Six pull-down menus are located in the menu bar near the top of the *VALE 2000 w*indow. You can display the pull-down menus either by clicking on one of the selections (File, Edit, Records, Maintain, Window or Help) or by using a shortcut key (for example, press ALT-F to pull down the File menu). The underlined letter in the menu name indicates the shortcut key to use for that menu. Once displayed, you can select any of the choices by using your mouse or the shortcut key for that selection.

File Menu

This menu contains six selections, four of which are common to many Windows™ applications: Page Setup, Print Preview, Print, and Exit. Note that *VALE 2000* provides built-in control of the Page Setup and Print features for its reports. They are provided on this menu for users that desire to print the system screens. This section describes these selections, plus the Refresh Path option.

Figure 39 File Menu

Page Setup – The Page Setup window contains three tabs which allow you to adjust the margins on your page, change the paper source or orientation, and adjust columns.

Print Preview – Use this option to preview anything before you print it.

Print – This menu choice opens the standard Print window, where you can select printers, the number of copies to print, and print. (To print a report to your default printer without opening the Print dialog box, you may find it easier to use the Print button in the toolbar.) This command is useful if you want to print a copy of the currently active form.

Refresh Path – Use this option to give *VALE 2000* information about the location of your data files. This is generally necessary only if you move the data files for some reason. When chosen, the screen in Figure 40 displays.

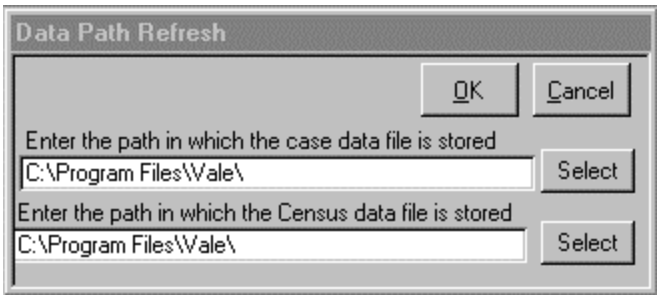

Figure 40 Data Path Refresh Screen

You may either enter the new path to your data or click on the Select button. If you click on the Select button, a form will appear to help you navigate to the proper directory. The path *must* contain the DYNATABL.MDB file, so use this feature with caution.

Exit – Use this to exit *VALE 2000*.

Edit Menu

This menu contains four selections, all of which are common to Windows™ applications: Undo, Cut, Copy, and Paste.

Figure 41 Edit Menu

Undo – Use this to undo your most recent action.

Cut – Use this to cut text from a field. The text will disappear from that field and will be available to paste.

Copy – Use this to make a copy of text in one location, leaving it there, but making it available to paste.

Paste – Use this to paste text gathered using the Cut or Copy commands.

Records Menu

This menu contains two options: Save Record and Refresh.

Figure 42 Records Menu

Save Record – Use this menu feature to save the current case (or attorney, etc.). *VALE 2000* saves the record automatically at various points, so using this option should not normally be necessary. However, if you want to save information for the current record without closing the form, choose this option.

Refresh – Use this option if you do not see records recently added or revised. For example, while working on the Case form in a network environment, you may know that another user has just added an attorney to the system. One way to make that attorney available for selection on your form is to close *VALE 2000*, and restart it. Another option is to choose Refresh, which will cause the system to make sure it includes any additions or changes made to the data by other users since you opened the screen.

Maintain Menu

The options on this menu are simply navigational aids to simplify access to the *VALE 2000* Maintenance functions: Attorneys, Consultants, Education Earnings, Consumer Prices Indices, and Options/Defaults. See Chapter 8 for a detailed description of these features.

Figure 43 Maintain Menu

Window Menu

If you have multiple windows open, use this pull-down menu to move among the open windows. The available windows will appear in the pull-down menu.

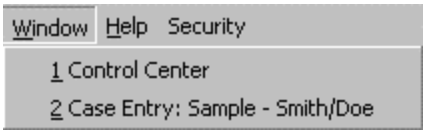

Figure 44 Window Menu

Help Menu

Use this menu to display information about the version of *VALE 2000*. You will need the information under the "About *VALE 2000*" option if you call for support service for a problem with *VALE 2000*.

Figure 45 Help Menu

Toolbar

VALE 2000 has a toolbar that will help you to navigate among the different windows involved in entering your data. It also includes typical Windows™ features like Print, Copy, and Undo.

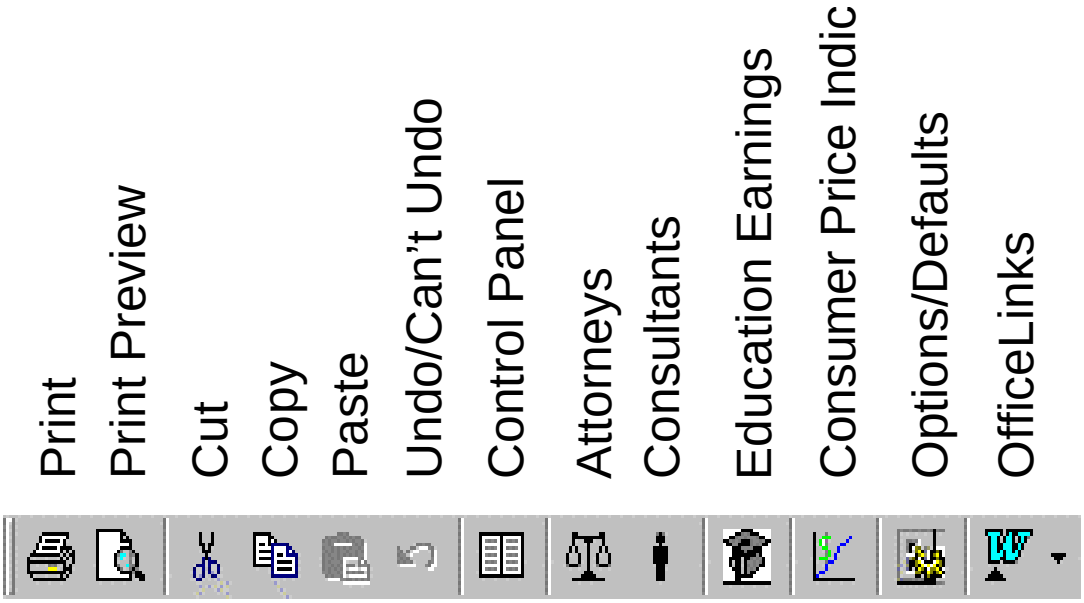

Figure 46 Toolbar

Figure 46 shows the names of the 13 buttons on the toolbar. You can also see a name of a button at any time by moving your mouse pointer over the button. If you pause for a moment over the button (without clicking), the name will appear.

The first six buttons give easy access to common Windows™ functions: Print, Print Preview, Cut, Copy, Paste, and Undo (described earlier in this chapter). The next six buttons are navigational tools to help you move among the various forms: Control Center, Attorneys, Consultants, Education Earnings, Consumer Price Indices, and Options/Defaults. The last five of these buttons take you to the one of the maintenance areas. Refer to Chapter 8 for more information about these functions. The Control

Center button brings you to the Case Select form. Use this button if you do not see any windows on your screen.

Use the last button, OfficeLinks to export a report to Microsoft Word™. Chapter 11 outlines the procedure for this.

Part III Using Your Data

Chapter 11 Reporting

Once data entry is complete, you are ready to print or display the report. To do this, press the Print Current Case button at the top of your data entry screen or select the desired case on the Case Select form and press the Print button.

Some users may also be able to export the report to Microsoft Word™ and/or Excel™ if they have these packages.

The reporting functions are described in detail below.

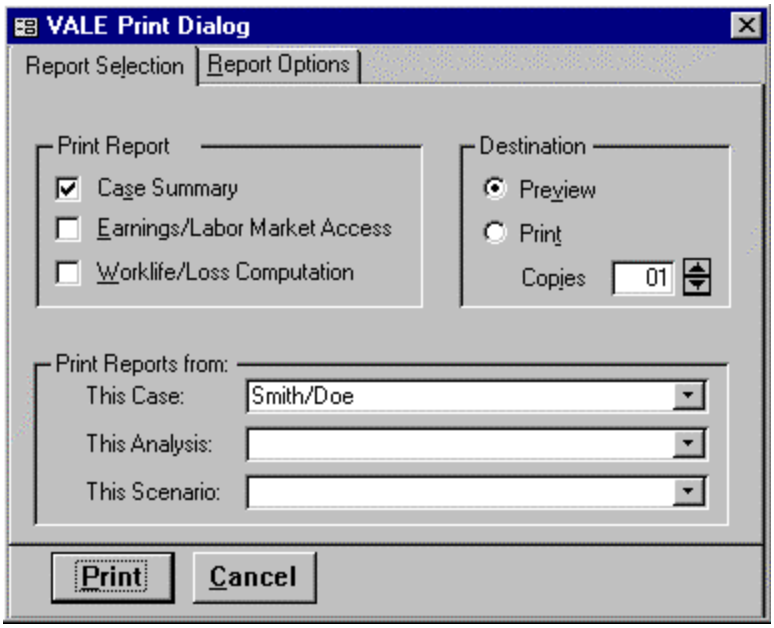

Figure 47 Print Dialog Form - Report Selection Tab

Report Selection Tab

Print Report

VALE 2000 allows you to print three types of reports. To select a certain type of report, check the box next to the report name by clicking on it with your mouse. The details regarding these report types will be given in the next chapters.

Destination

VALE 2000 allows you a choice of displaying your reports on the screen or printing them. With your mouse, click on your destination. Note that *VALE 2000* will sometimes prevent you from displaying reports on the screen if there are numerous reports or the reports are large. If the choice to display is not available to you, try selecting just one analysis or one scenario as described below. Also, if you wish to change the number of copies to be printed, click the up or down arrows next to the number until the desired number of copies appears.

Print Reports from

VALE 2000 automatically enters in the This Case field the Case Reference of the case you selected for printing. If you wish to print a different case, select it from the drop down list. All of the analyses that you set up for this case will be available on the This Analysis list. If you wish to print all results from a particular case, do nothing. If you want to see the results from one analysis only, select the analysis from the list. Similarly, if you want to print a VALE run from one scenario only, select the scenario from the This Scenario list. Again, leave this field blank if you wish to print everything.

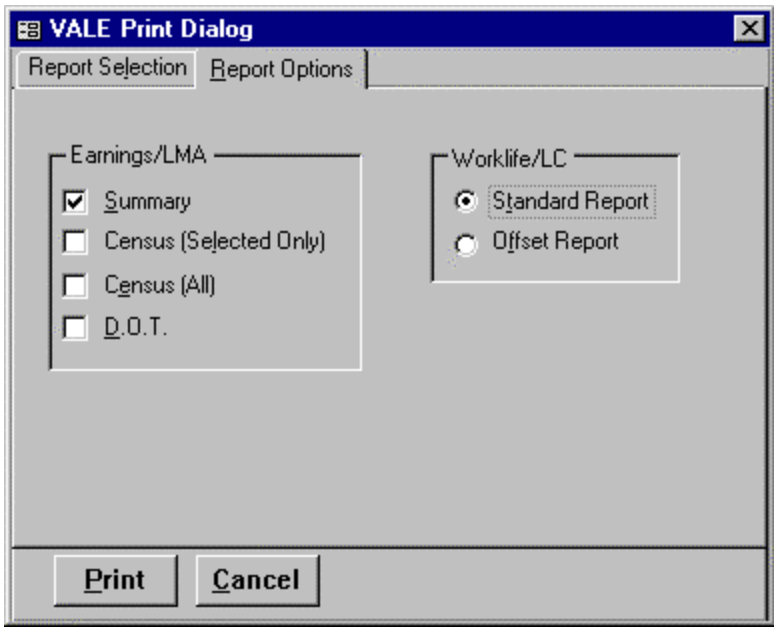

Figure 48 Print Dialog Form - Report Options Tab

Report Options Tab

Earnings/LMA

VALE 2000 allows you to print the results of your VALE run in varying detail. In this field, select the report or reports you wish to print by clicking on the box with your mouse. Details on the printouts can be found in Chapter 13.

Worklife/LC

You also have a choice of the type of Worklife Probability printout you would like. Details of these choices can be found in Chapter 14. Note that if you wish to use the Offset option, the growth and discount rates must be equal. The program does not allow differing rates with this print option.

Exporting Reports to Microsoft Word ä or Excel ä

Users who also own Microsoft Office™ may be able to export reports from *VALE 2000* to Microsoft Word™ and/or Excel™. Before attempting to use this feature of *VALE 2000*, confirm that you meet the additional requirements listed in the next section.

Additional System Requirements for Exporting Reports

Enough memory to open Word™ or Excel™ in addition to *VALE 2000*.

Microsoft Excel 97™ or later

Microsoft Word 97™ or later

Exporting Reports

Once you have confirmed that you meet the system requirements, you may export a report from *VALE 2000* to Microsoft Word™ or Excel™ by following the steps listed below:

- **Exporting Reports**

1. Select the case using the Case Select Form.
2. Click on the Print button
3. Click on the Preview destination button.
4. Choose the desired scenario and desired report type.
5. Click on the Print button.
6. Make the window with the report you wish to export the active window by clicking on it.
7. Click on the OfficeLinks icon below the menu bar and select Publish It with MS Word™ or Analyze It with MS Excel™.

When this procedure is complete, Word™ or Excel™ (whichever you chose) will open, displaying the exported document. Note that not all reports may be available for previewing.

Chapter 12 Case Summary Report

As described in the previous chapter, *VALE 2000* presents your data in three basic types of reports: the Case Summary Report, the VALE Report, and the Worklife Probability Report. This chapter describes the Case Summary Report.

The report on the next page shows you a Case Summary for a fictitious case regarding John Doe. Many of the items in the report are simply echoing your input. The items that are calculated in some way are described below:

Number	Name	Description
1	Loss Range	Displays the lifetime loss calculated based on your input
2	Age	Displays the client's age as of the Report Date
3	Pre-Injury Worklife Expectancy	Displays the pre-injury worklife expectancy of the client
4	Pre-Injury Earning Package	Displays the pre-injury annual earning capacity, including fringe benefits
5	Post-Injury Worklife Expectancy	Displays the post-injury worklife expectancy of the client
6	Post-Injury Earning Package	Displays the post-injury annual earning capacity, including fringe benefits

Case Summary

Sample - Smith/Doe

Mar 10, 1999

Attorney: Smith, John (1) **Prepared by:** Name, Consultant (2)

Client: Doe, John **Gender:** Male **Age:** 38.69 **Date of Injury:** 8/17/96

Loss Range: $348,282 - $441,933

Comments: Two analyses conducted based on actual earnings and on labor market data.

		Preinjury			***Postinjury***		
Analysis	*Name*	*Worklife Exp.*	*Earning Package*	*Name*	*Worklife Exp.*	*Earning Package*	*Loss*
Analysis - Actual	Pre-Injury - Actual	21.9	39,360	Post-Injury - Actual	16.0	29,520	441,933
Analysis - VALE	Pre-Injury - VALE	21.9	37,845	Post-Injury - VALE	16.0	33,092	348,282

(3) (4) (5) (6) (1)

Chapter 13 VALE Report

This chapter describes your options for printing VALE reports. As with the Case Summary report, many of the items in the report simply echo your input. The items that are calculated in some way are described below.

The reports in this chapter are for the same fictitious case regarding John Doe. The examples are for a pre-injury run requesting mean earnings for nondisabled male workers in the national labor market. The parameter entered was General Learning Ability equal to Medium, for a tabulation of average earnings for those jobs requiring an average degree of the aptitude. See Chapter 15 through Chapter 17 for a description of the data sources and calculations in VALE.

Through the options presented on the Report Options tab in the Print Dialog form (see page 59), *VALE 2000* allows you to print VALE reports in varying degrees of detail:

Report Type	Description
Summary	Summarizes your results using the six broad occupational groups (see Chapter 15).
Census (Selected Only)	Prints those Census Codes categories in which occupational codes are present that match your scenario parameters. Summarizes information for each code on the total number of employed persons in the code, the selected number of employed persons in the code, the total number of occupational titles in the code, and the number of occupational titles in the code that match your parameters. In addition, it lists the earnings associated with that code.
Census (All)	In addition to presenting information available on the Census (Selected Only) report, this selection also lists those Census Codes categories in which there were no occupational titles that match your scenario parameters.
D.O.T.	In addition to presenting information available on the Census (Selected Only) report, this selection also lists the occupational titles that match your scenario parameters. Depending on your parameters, this can result in a very long report.

VALE Summary Report

Figure 49 presents that portion of the VALE Summary Report that is calculated based on the parameters you entered. Details are present below the figure.

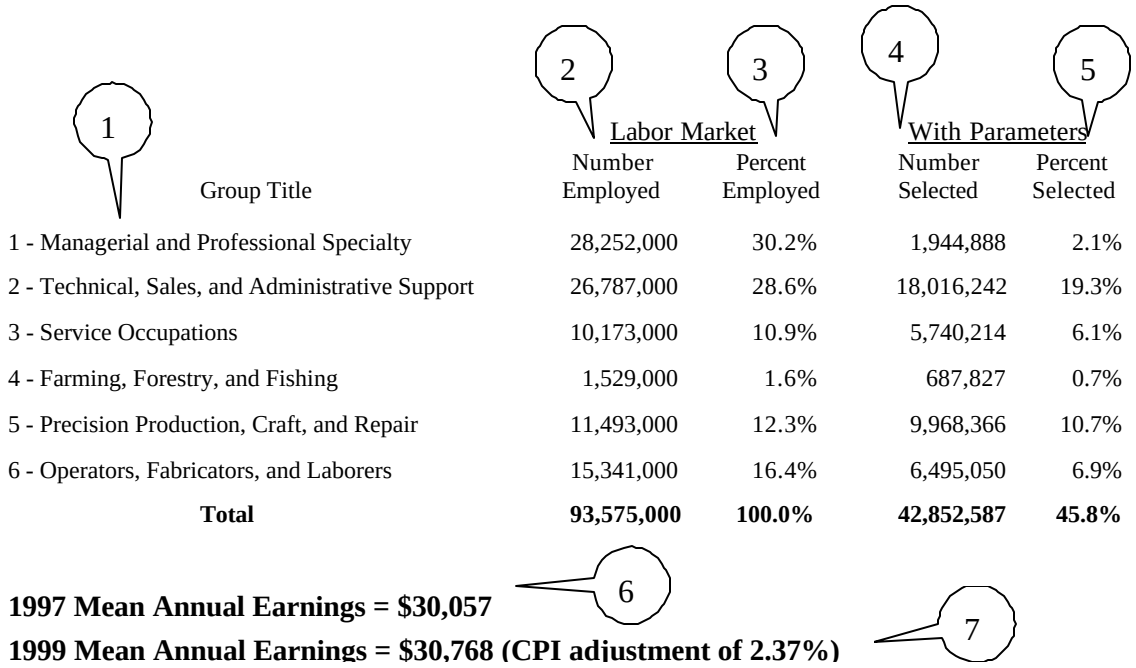

Figure 49 VALE Summary Report

Number	Name	Description
1	Group Title	Presents the number and name of the broad Census group being summarized.
2	Labor Market Number Employed	Presents the total number of people employed in each broad group for the labor market you chose for the run.
3	Labor Market Percent Employed	Presents the percent of people employed in each broad group for the labor market you chose.
4	With Parameters Number Selected	Presents the number of people employed in each broad group that match the parameters you entered (see Chapter 17).
5	With Parameters Percent Selected	Presents the percent of people employed in each broad group that match the parameters you entered. The percent relates to the total number of people in the labor market, not the number of people in the group.
6	1997 Mean Annual Earnings	Presents the average earnings for the run based on the parameters entered and the labor market chosen (see Chapter 17).
7	1999 Mean Annual Earnings	Presents the average earnings for the run after updating to report year dollars using CPI (see 0).

VALE Census Report

If desired, you can print more detailed information regarding the results of your VALE run. The next level of report summarizes the run at the Census Code level. Figure 50 presents those Census Codes in which occupational codes are present that match your scenario parameters (the level of printout you will get by choosing Census (Selected Only) on the Report Options tab).

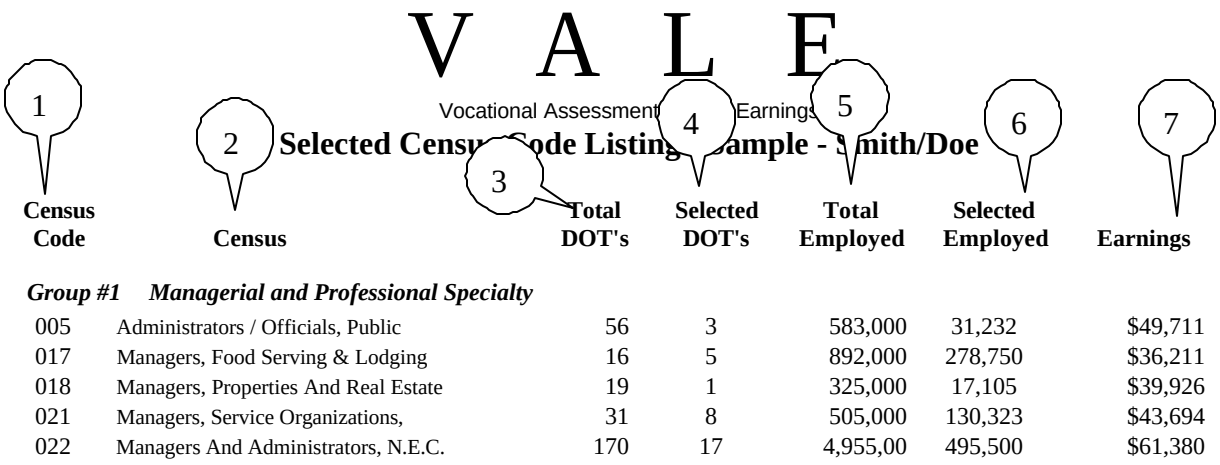

Figure 50 VALE Census (Selected Only) Report

Number	Name	Description
1	Census Code	Presents the number of the Census Code being summarized.
2	Census	Presents the name of the Census Code being summarized.
3	Total DOTs	Presents the total number of occupational titles within each Census Code presented.
4	Selected DOTs	Presents the number of occupational titles that match the parameters entered for the run.
5	Total Employed	Presents the total number of people employed in each Census Code for the labor market chosen.
6	Selected Employed	Presents the number of people employed in each Census Code that match the parameters entered for the run (see Chapter 17).
7	Earnings	Presents the earnings for each Census Code. In this example, the earnings requested are for nondisabled males.

The Census (All) report option (Figure 51) is very similar to the Selected Only option (Figure 50). In addition to all of the information presented in the Selected Only report, it lists all Census Codes regardless of whether any of the occupational titles within the code match the parameters entered for the run.

V A L E

Vocational Assessment of Lost Earnings

Complete Census Code Listing: Sample - Smith/Doe

Census Code	Census	Total DOT's	Selected DOT's	Total Employed	Selected Employed	Earnings
Group #1	***Managerial and Professional Specialty***					
003	Legislators	1		13,000	*None*	$44,112
004	Chief Executives / General Admin,	1		13,000	*None*	$44,112
005	Administrators / Officials, Public	56	3	583,000	31,232	$49,711
006	Administrators, Protective Services	13		54,000	*None*	$45,054
007	Financial Managers	8		652,000	*None*	$60,281

Figure 51 VALE Census (All) Report

VALE DOT Report

The VALE DOT reports add another level of detail to the Census reports just described. In addition to all of the information presented in the Census (Selected Only) report (Figure 50), it presents the number and name of the occupational titles that match the parameters entered for the run (see Figure 52).

V A L E

Vocational Assessment of Lost Earnings

Selected Occupation Listing: Sample - Smith/Doe

Census Code	Census	Total DOT's	Selected DOT's	Total Employed	Selected Employed	Earnings
005	Administrators / Officials, Public	56	3	583,000	31,232	$49,711
	169.167-0 Park Ranger			169.167-0 Public Health Registrar		
	185.167-0 Supervisor, Liquor Stores And					
017	Managers, Food Serving & Lodging	16	5	892,000	278,750	$36,211
	185.137-0 Manager, Fast Food Services			187.167-0 Manager, Camp		
	187.167-1 Manager, Liquor Establishment			320.137-0 Manager, Boarding House		
	320.137-0 Manager, Lodging Facilities					
018	Managers, Properties And Real Estate	19	1	325,000	17,105	$39,926
	186.167-0 Manager, Apartment House					

Figure 52 VALE DOT Report

Chapter 14 Worklife Probability Report

This chapter describes your options for printing Worklife Probability reports. As with the Case Summary and VALE reports, many of the items in the report simply copy your input. The items that are calculated in some way are described below. To review information pertaining to the calculations underlying this report, see Chapter 18 and Chapter 19.

The reports in this chapter are for the same fictitious case regarding John Doe. The example assumes that Mr. Doe is a high school graduate who was nondisabled prior to the injury in question. As a result of injury, he is restricted to work of a sedentary to light nature and has a worklife like that of an average not severely disabled male.

Through the options presented on the Report Options tab in the Print Dialog form (see page 59), *VALE 2000* allows you to print two different types of Worklife Probability reports:

Report Type	Description
Standard Report	This option calculates both probable worklife and adjusted earnings for every year. Choose this option if you wish to use a net discount rate.
Offset Report	This option calculates only probable worklife for each year. Lifetime earnings are calculated based on the total worklife expectancy in combination with the earnings package. This option is only available with a total offset.

Regardless of the report type chosen, the top portion of the Worklife printout will be the same, as presented in Figure 53.

Number	Name	Description
1	Notes	Notes created by the program which summarize your analysis choices.
2	Current Wage Base	Presents the pre-injury and post-injury annual earning capacity based on your scenario inputs.
3	Future Worklife Value	Presents the pre-injury and post-injury worklife expectancy as of the report date by summing the individual Probable Worklife figures (see next section).
4	Future Worklife Percent	Presents as a percentage the loss of worklife expectancy from pre-injury to post-injury.

Number	Name	Description
5	Lifetime Earnings	Presents the total pre-injury and post-injury lifetime earnings based on your scenario inputs by summing the individual Adjusted Earnings figures (see next section). It also presents the total lifetime loss.

Worklife Probability
Computation of Lost Worklife and Earnings
Sample - Smith/Doe
Analysis - VALE

Attorney: Smith, John **Prepared by:** Name, Consultant
Client: Doe, John
Notes: Both scenarios factor the probabilities of life, participation, and employment. Past losses are computed for periods between the injury date and date of analysis. Base earnings for past losses are stated in current period dollars, and are not adjusted for discount and growth rates.

1

Summary:

	Pre-Injury - VALE		*Post-Injury - VALE*		*General*
Birth Date					7/1/60
Injury Date					8/17/96
Analysis Date					3/10/99
Cur. Wage Base	$30,768		$26,904		
Fringe Rate	23.0%		23.0%		
Education Level	12 years		12 years		
Gender Life/PE	M/M		M/M		
Continuum	Not Disabled		Disabled, Not Severely		
Growth/Discount	Pure Offset		Pure Offset		
Future Worklife	21.9		16.0		27%
Lifetime Earnings	$915,730	-	$567,448	=	$348,282

2 3 4 5

Figure 53 Worklife Probability Report - Summary Portion

Worklife Probability Standard Report

Worklife Probability gives you two options for printouts. The Standard Report presented in this section calculates the probable worklife each year. It then combines the resulting figure with the earning package for that year to end up with Adjusted Earnings for each year. These individual figures are then summed to calculate lifetime totals. See Chapter 18 for details of the worklife expectancy calculation.

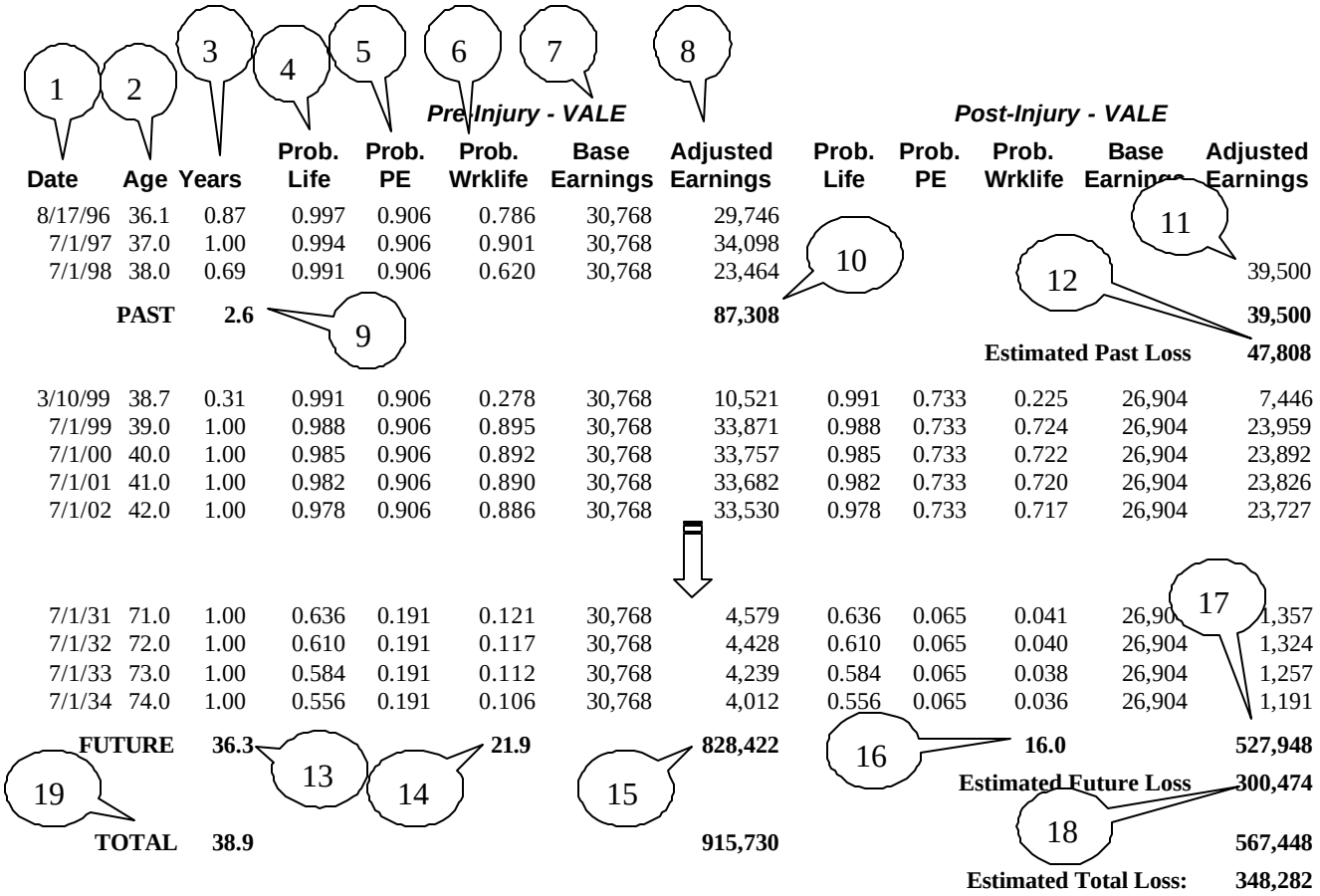

Figure 54 Worklife Probability Standard Report

Number	Name	Description
1	Date	Presents the date beginning the period being analyzed.
2	Age	Presents the age of the client at the beginning of the period being analyzed.
3	Years	Presents the number of years in the period being analyzed.
4	Prob. Life	Presents the client's probability of living through the period (see page 121).
5	Prob. PE	Presents the client's probability of participation and employment for the period based on age, gender, education, and disability status (see page 122).
6	Prob. Wrklife	Presents the client's probable worklife for each period. This figure is the product of the Life and PE figures (see Chapter 18).
7	Base Earnings	Presents the Current Wage Base discounted to

Number	Name	Description
		present value (see page 133).
8	Adjusted Earnings	Presents the client's probable earnings for the period. This figure is the product of the base earnings, fringe benefits, and probable worklife (see page 133).
9	Past Years	Presents the total number of calendar years comprising the past loss period (from the date of injury to the report date).
10	Past Pre-Injury Adjusted Earnings	Presents the total amount of pre-injury adjusted earnings during the past loss period.
11	Post-Injury Adjusted Earnings	Echoes your input. See Chapter 7.
12	Estimated Past Loss	Calculates the estimated past loss by subtracting the post-injury adjusted earnings from the pre-injury adjusted earnings.
13	Future Years	Presents the total number of calendar years comprising the future loss period.
14	Pre-Injury Prob. Wrklife	Presents the total pre-injury worklife expectancy for the future loss period by summing the individual probable worklife figures.
15	Pre-Injury Adjusted Earnings	Presents the total pre-injury adjusted earnings for the future loss period by summing the individual adjusted earnings figures.
16	Post-Injury Prob. Wrklife	Presents the total post-injury worklife expectancy for the future loss period by summing the individual probable worklife figures.
17	Post-Injury Adjusted Earnings	Presents the total post-injury adjusted earnings for the future loss period by summing the individual adjusted earnings figures.
18	Estimated Future Loss	Calculates the estimated future loss by subtracting the post-injury adjusted earnings from the pre-injury adjusted earnings.
19	Total	Calculates lifetime totals by adding the individual totals for the past and future loss periods.

Worklife Probability Offset Report

The Offset Report option presented in this section calculates the probable worklife each year (see Chapter 18). It sums the yearly worklife probabilities, then combines the resulting figure with the earning package to end up with lifetime Adjusted Earnings. Details of this report that vary from the Standard Report are present in this section.

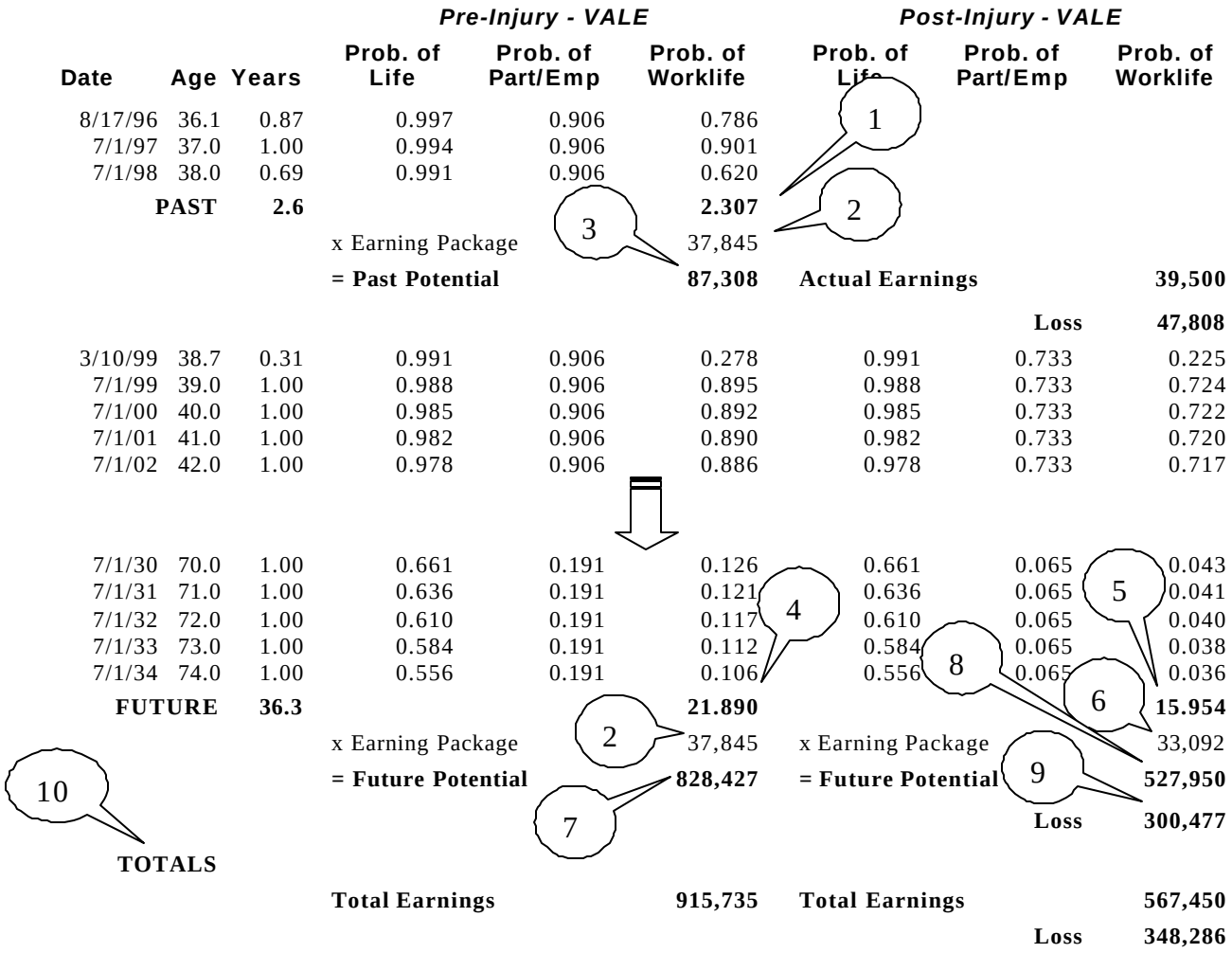

Figure 55 Worklife Probability Offset Report

Number	Name	Description
1	Past Pre-Injury Prob. Of Worklife	Presents the client's pre-injury total probable worklife for the past loss period.
2	Pre-Injury Earning Package	Presents the pre-injury earning package, a combination of the base earnings and the fringe benefits.
3	Pre-Injury Past Potential	Presents the total pre-injury adjusted earnings for the past loss period, a product of the probable worklife and the earning package.

Number	Name	Description
4	Future Pre-Injury Prob. Of Worklife	Presents the client's total pre-injury probable worklife for the future loss period.
5	Future Post-Injury Prob. Of Worklife	Presents the client's total post-injury probable worklife for the future loss period.
6	Post-Injury Earning Package	Presents the post-injury earning package, a combination of the base earnings and the fringe benefits.
7	Pre-Injury Future Potential	Presents the total pre-injury adjusted earnings for the future loss period, a product of the probable worklife and the earning package.
8	Post-Injury Future Potential	Presents the total post-injury adjusted earnings for the future loss period, a product of the probable worklife and the earning package.
9	Future Loss	Calculates the estimated future loss by subtracting the post-injury future potential from the pre-injury future potential.
10	Totals	Calculates lifetime totals by adding the individual totals for the past and future loss periods.

Part IV Reference

Chapter 15 VALE Sources

VALE utilizes sources of information on job characteristics, employment, and earnings. The Dictionary of Occupational Titles (DOT) is used to define job-specific characteristics. Data from the 1990 Census provide information regarding employment and earnings. Both the job-specific characteristics and employment figures used by VALE are static from year to year. Earnings are updated annually through information contained in the March supplement of the Current Population Survey (CPS).

Occupational Data

The Dictionary of Occupational Titles (DOT), 4th Edition, Revised 1991 contains 12,741 separate job titles that are cross-referenced by worker characteristics required to perform work satisfactorily. The classification of job titles and worker characteristics is the responsibility of the U.S. Department of Labor, Employment and Training Administration. VALE utilizes 12,708 of these job titles, excluding 33 military occupations to focus on the civilian labor force.

Each of these 12,708 job titles is cross-walked to one of 501 Census Code occupational categories by the National Crosswalk Service Center, an agent of the National Occupational Information Coordinating Committee (NOICC). In addition, as later defined, thirty-one titles have been added to accommodate Census Code occupational categories that are void of DOT job titles, giving a total of 12,739 titles. These additional titles are also cross-walked to the Census Code occupational categories. Each of these three-digit Census Code categories is grouped into one of six broad occupational groups as follows:

1. Managerial and Professional Specialty
2. Technical, Sales, and Administrative Support
3. Service Occupations
4. Farming, Forestry, and Fishing
5. Precision Production, Craft, and Repair
6. Operators, Fabricators, and Laborers

Earnings and Employment Data

Data on earnings by Census Code occupational categories are available from several sources. Earnings for disabled and nondisabled persons by gender are reported in the 0.05 percent of the 1990 Census of Population and Housing. Data are also reported by Census Code occupational categories in the March supplement of the Current Population Survey (CPS), which is released by the Bureau of Labor Statistics. Earnings and employment data for a VALE labor market is first derived from the 1990 Census data. The most recent CPS data are utilized to adjust earnings to dollar values in terms of the CPS year. Applied to these CPS-adjusted annual earnings are ratios that permit conversion to local labor market dollars that are specific for disabled and nondisabled workers. These ratios are applied to the 1990 Census means and medians for the local labor market. This computation is performed to create the labor market data files that accompany the VALE software. Discussion regarding the calculation and application of these ratios is contained in sections Census Data and CPS Data.

Employment data are derived from the 1990 Census. These data are used to report the number of employed persons by three-digit Census Code category at the local labor market level. Unlike the earnings data, the employment data are static and therefore not modified by any other data source. A more detailed description of how VALE uses Census and CPS data follows.

Census Data

The U.S. Department of Commerce, Bureau of the Census, surveys the earnings for full-time wage and salary workers by detailed three-digit Census Code categories every ten years. Both mean and median earnings are derived for all persons (disabled and nondisabled combined), disabled persons, and nondisabled persons. The data are gender-specific and may be summarized at the national, state, and local labor market levels. The 1990 Census provides this information based on 1989 earnings and employment.

The mean earnings from the 1990 Census by broad occupational group are listed below. These mean earnings are segregated by gender and disability status. In addition the ratios of average disabled dollars to all person dollars and average nondisabled dollars to all person dollars are reported by gender. These ratios are the basis for the earning variability that exists by disability status.

Census Summary Group Ratios

		Earnings			Ratios		
Group	**Disability Status**	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**
1	All Persons	40,861	49,037	28,627			
	Nondisabled	41,025	49,346	28,697	100.40%	100.63%	100.24%
	Disabled	34,876	39,237	25,400	85.35%	80.02%	88.73%

		Earnings			Ratios		
Group	**Disability Status**	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**
2	All Persons	26,376	34,562	20,053			
	Nondisabled	26,444	34,772	20,099	100.26%	100.61%	100.23%
	Disabled	24,264	29,351	18,291	91.99%	84.92%	91.21%
3	All Persons	18,785	22,993	14,160			
	Nondisabled	18,858	23,138	14,224	100.39%	100.63%	100.45%
	Disabled	17,301	20,463	12,608	92.10%	89.00%	89.04%
4	All Persons	19,808	20,736	12,762			
	Nondisabled	19,975	20,917	12,918	100.84%	100.87%	101.22%
	Disabled	17,158	17,944	9,729	86.62%	86.54%	76.23%
5	All Persons	27,913	28,621	20,184			
	Nondisabled	27,999	28,716	20,234	100.31%	100.33%	100.25%
	Disabled	25,623	26,135	18,541	91.80%	91.31%	91.86%
6	All Persons	22,482	24,434	16,166			
	Nondisabled	22,568	24,541	16,217	100.38%	100.44%	100.32%
	Disabled	20,401	21,926	14,776	90.74%	89.74%	91.40%

Since there are a limited number of disabled workers within each of the three-digit Census Code categories, it is not possible to define accurately average earnings for disabled persons at the three-digit Census code level. This is true only to a limited degree at the national level, but exists to a greater degree at the state and local levels. Therefore, to portray reasonably the earnings variance that exists for disabled persons who work, a conversion geared to the six broad occupational groups is appropriate. Once these conversion ratios are obtained, they are applied to earnings figures from the most current CPS data. The ratios are applied to all the three-digit Census Code categories that fall within the relevant broad occupational group.

For example, the first broad occupational group is Managerial and Professional Specialty. This includes all three-digit Census Code category numbers between 003 and 199. The CPS earnings figures from each of these three-digit Census Code categories are multiplied by 1.0040 and 0.8535 to arrive at average nondisabled and average disabled earnings respectively. These earning figures expressed in CPS year dollars represent the best estimate of earnings for workers in the occupational group Managerial and Professional Specialty by disability status.

At the local level, i.e. state or metropolitan area, local dollars are obtained through the use of a conversion factor similar to the one used above for establishing discrepant patterns of the earnings of disabled and nondisabled persons. Problems with the sample size make it difficult to report local dollars by three-digit Census Code and virtually impossible to report local dollars for disabled persons without statistical interpolation.

In the example below, 1990 Census mean earnings for all persons at the national level are compared to 1990 Census mean earnings at a local level (New York City). This is done

for each of the six broad occupational groupings. The ratio revealing the variability existing at the local level is then applied to CPS earnings figures in each of the three-digit occupational categories within their respective broad occupational groupings. The same ratio is applied to all persons, men, and women by disability status. For example, suppose you want VALE to estimate earnings for Optometrists in New York City. VALE would take the CPS earnings for Optometrists and multiply them by 1.19, since this occupation falls in the first broad occupational group, namely Managerial and Professional Specialty.

Census Summary Group Ratios

Group	National	NYC	Ratio
1	40,861	48,659	1.19
2	26,343	31,176	1.18
3	18,785	23,222	1.24
4	19,808	22,517	1.14
5	27,983	31,037	1.11
6	22,481	23,749	1.06

The ratios used to differentiate between disabled and nondisabled workers and earning patterns for workers in various regions of the country are obtained through the 1990 Census. The dollars reported by VALE represent a single best estimate of earnings that vary as a function of region and disability versus nondisability status.

CPS Data

The U.S. Department of Labor, Bureau of Labor Statistics, collects national earnings data for full-time wage and salary workers on an annual basis. Both mean and median national earnings as well as the national number of employed persons are reported by detailed three-digit Census Code category. These earnings are reported for all persons combined and also by gender. The data are contained in an annual report entitled "Usual Weekly Earnings of Employed Wage and Salary Workers Who Usually Work Full-Time by Detailed (3 digit Census Code) Occupation, and Sex; Unpublished Tabulations from the Current Population Survey, Table A-26."

When VALE reports mean or median earnings, it begins with data from the 1990 Census. The 1989 earnings contained in the census data are utilized to obtain the census to summary ratios for local labor markets and by disability status. This data source is utilized to obtain variability in earnings by locality and disability status. Applying these ratios to the most current CPS data provides the best estimate of earnings stated in CPS year dollars by disability status and locality. This conversion process to arrive at a labor market's earnings for a CPS year is actually performed to create the base data files that VALE uses. Thus, this portion of the computation is already complete before any VALE run.

For example, suppose you want VALE to estimate the average earnings of nondisabled male Fire Fighters in New York City stated in terms of CPS year dollars. The New York

City labor market data recognize that Fire Fighters are part of the broad occupational group Service Occupations (group 3). The census to summary ratios by disability status and locality derived from the 1990 Census are retrieved. In this case, the census to summary ratio for nondisabled males in group 3 is 100.63% or 1.0063. The census to summary ratio for workers in New York City working in group 3 is 1.24. After retrieving these ratios, the average earnings of workers in Census Code 417 (Fire Fighters) from the CPS data is multiplied by 1.0063 and again by 1.24 to arrive at the estimated average earnings of nondisabled male Fire Fighters in New York City. This estimate is stated in terms of CPS year dollars.

Current Year Escalation

Since the earnings information developed from the CPS is usually one year in arrears, the above process does not result in the most current earnings. VALE allows optional (case-specific) adjustment to current-year dollars using the "Consumer Price Index, All Urban Consumers (CPI-U), U.S. City Average, All Items" which is provided by the U.S. Department of Labor, Bureau of Labor Statistics (see 0).

Data Modified for VALE

Outliers

VALE reports mean and median earnings by detailed three-digit Census Code category for Males, Females, and Both Sexes. Since there are 501 Census Code categories, this implies that VALE contains 1503 mean and median earnings figures that are gender specific and non-specific. In some cases, the CPS is missing earnings figures for Males, Females, or Both Sexes. In other cases, sample sizes are too small at the detailed three-digit Census Code category level to provide reliable estimates. There are also occurrences where estimates are considered unreliable because the standard error for the mean or median is at least sixty percent of the size of the mean or median. In these latter cases, the dollar figures are considered to be "Outliers." The remainder of this section will explain how the CPS is adjusted for cases of missing earnings figures and Outliers.

Of the 1503 gender specific and non-specific Census Code categories, there were approximately 69 which were missing from the annual report entitled "Usual Weekly Earnings of Employed Wage and Salary Workers Who Usually Work Full-Time by Detailed (3 digit Census Code) Occupation, and Sex; Unpublished Tabulations from the Current Population Survey, Table A-26." These include approximately 10 for males, 53 for Females, and six for Both Sexes. If the mean and median earnings for the Both Sexes category were missing, they were replaced by the earnings available in the next higher summary category for the Census Code. The table below provides details on the Census Code categories that were missing earnings figures for the Both Sexes category and how they were imputed.

Census Code Category	Title	Method for Imputing Earnings
258	Sales Engineers	Used earnings from summary category, Sales Reps, Commodities, Except Retail; split number employed from summary category equally between 258 and 259 (the only two Census Codes under the summary)
259	Sales Reps, Mining, Manufacturing & Wholesale	See 258
284	Auctioneers	Used earnings from summary category, Sales-related Occupations
403	Launderers & Ironers	Used earnings from summary category, Private Household Occupations
655	Misc. Precision Metalworkers	Used earnings from summary category, Precision Metalworking Occupations
868	Helpers, Extractive Occupations	Used earnings from summary category, Helpers, Construction and Extractive Occupations

An earnings figure is considered to be an Outlier if the Bureau of Labor Statistics reports that the Census Code category has a total of two thousand or fewer employed people or if the standard error of either the mean or median is at least sixty percent of the mean or median earnings figure. This resulted in approximately 152 Census Code category Outliers that are gender specific or non-specific. The same procedure is utilized to replace Outliers and missing earnings for men or women. The table below lists the Census Code categories that contain Outliers or missing earnings figures by gender.

Census Codes Categories by Gender With Missing Earnings or Outliers

Females	
Missing	049, 054, 063, 088, 117, 136, 233, 258, 259, 284, 403, 454, 474, 497, 499, 514, 516, 519, 526, 543, 553, 554, 555, 557, 565, 566, 583, 584, 588, 596, 597, 598, 613, 614, 615, 644, 645, 655, 656, 659, 669, 705, 713, 814, 825, 828, 829, 833, 845, 848, 867, 868, 875
Outliers	003, 004, 019, 028, 046, 047, 058, 068, 074, 089, 113, 116, 124, 125, 126, 138, 139, 145, 146, 147, 148, 149, 153, 168, 215, 226, 228, 306, 309, 325, 347, 366, 404, 413, 416, 425, 455, 462, 473, 483, 489, 494, 495, 496, 498, 505, 506, 509, 515, 517, 527, 534, 535, 536, 538, 539, 544, 556, 563, 564, 577, 587, 589, 593, 594, 595, 616, 617, 634, 635, 636, 643, 646, 653, 654, 676, 693, 695, 696, 699, 704, 707, 714, 724,

	725, 728, 729, 755, 764, 766, 773, 786, 798, 823, 826, 834, 843, 853, 855, 864, 865, 866, 876
Males	
Missing	149, 204, 205, 258, 259, 284, 325, 403, 655, 868
Outliers	086, 088, 097, 117, 125, 136, 144, 145, 148, 153, 193, 285, 306, 309, 404, 405, 425, 466, 474, 483, 489, 499, 649, 659, 684, 729, 743, 793, 814, 825, 833, 845
Both Sexes	
Missing	258, 259, 284, 403, 655, 868
Outliers	088, 117, 136, 149, 153, 306, 325, 473, 474, 494, 499, 659, 728, 814, 825, 833, 845

Imputing Missing Values for Earnings by Gender and Outliers

Missing values are imputed by examining the ratio of mean or median earnings at the detailed three-digit Census Code category level to the mean or median earnings at the next largest summary category level that the Census Code falls into. For example, let us look at Census Code 473 (Farmers) where earnings are Outliers for the Both Sexes category. VALE will check first if Male earnings are reported for Census Code 473. If they are reported, and if they are not also an outlier, earnings are imputed for the Both Sexes category using the following formula:

$$(MC / MS) * BS = BC$$

Here the values of MC and BC are the Census Code category mean or median earnings for the group of Males and Both Sexes, respectively. The values of MS and BS are the mean or median earnings of the next largest Summary Group containing Census Code 473 for the group of Males and Both Sexes, respectively. For Census Code 473, this summary group is Farm Operators and Managers. In this case the ratio of Census Code category earnings to Summary Group earnings is estimated as roughly the same for the groups Male and Both Sexes. If the Male Census Code category mean or median (MC) is on the list of Outliers, the Female ratio of Census Code to Summary Group earnings (FC / FS) is used to impute the value of earnings for the Both Sexes group. If both the Male and Female earnings at the Census Code level are on the Outliers list, the earnings at the summary category level will be used (i.e., MS = MC, FS = FC, BS = BC).

The table below illustrates the modifications made for VALE in this example. The table shows mean weekly earnings by summary group (Farm Operators and Managers) and for Census Code 473 (Farmers) for both sexes and males. In this case, the both sexes mean

dollar needs to be estimated based on the other three earnings figures. The table shows that male Farmers earned an average of $400 per week while the average weekly earnings for males in the broader occupational group of Farm Operators and Managers was $522. Therefore male Farmers, on average, earned (400/522)*100 or approximately 77 percent less than the average farm operator and manager. If one pooled men and women together into a "Both Sexes" group, it is reasonable to believe that the Both Sexes group of Farmers would have average earnings roughly 77 percent less than the average Both Sexes earnings of all Farm Operators and Managers (BS). This calculation which is made for VALE is shown at the bottom of the table. So VALE uses an imputed value of $382 for the Both Sexes average earnings for Farmers. Similar calculations are also performed for median dollars.

Mean Weekly Earnings by Gender Group and Occupational Group

Level	Title	Male	Both Sexes
Summary Group	Farm Operators and Managers	MS = 522	BS = 498
Census Code	Farmers	MC = 400	BC = 382
(400 / 522) * 498 = BC = 382			

A similar technique is utilized to impute earnings missing for either Male or Female groups. When the earnings for Males or Females is missing or on the list of Outliers, it will be imputed by employing the Census to Summary Group ratio for Both Sexes whenever possible. In this case, VALE imputes the gender specific Census Code category earnings (GC) using information on the ratio of Census Code category earnings to Summary Group earnings for Both Sexes (BC / BS) and gender specific Summary Group earnings (GS). The following formula shows the calculation VALE makes in this situation:

$$(BC / BS) * GS = GC$$

If the Both Sexes Census Code category earnings is also on the Outliers list, the Census to Summary Group ratio for the opposite gender (OC / OS) is adopted in place of the Both Sexes Census to Summary Group ratio (BC / BS). If the Census to Summary Group ratio for the opposite gender is also on the Outliers list, the earnings for the summary category will be used.

Method for Splitting Combined Census Codes

There are eleven instances in the annual report entitled "Usual Weekly Earnings of Employed Wage and Salary Workers Who Usually Work Full-Time by Detailed (3 digit Census Code) Occupation, and Sex; Unpublished Tabulations from the Current

Population Survey, Table A-26" where two Census Code categories are combined into one listing. For use in VALE, these are split to correspond with the data gathered in the 1990 census. The following pairs of Census Code categories have been split: (003, 004), (473, 474), (475, 476), (505, 506), (563, 564), (567, 569), (575, 576), (585, 587), (634, 635), (637, 639), and (653, 654).

To derive the number employed for the individual Census Code categories, the number employed is divided by two and the result placed in each Census Code category. If the number employed reported by the Bureau of Labor Statistics is an odd number, the "extra person" is assigned to the first Census Code category. For instance, the Both Sexes Census Code categories 003 and 004 have been combined in the tabulations from the Current Population Survey and have a total number employed of 21. After the split, Census Code category 003 will be assigned a total number employed of 11 and Census Code category 004 will be assigned a total number employed of 10.

The mean and median earnings figures will not be adjusted in any way. Therefore, both of these Census Code categories are assigned the same mean and median annual earnings.

Census Codes Without DOT Titles

Thirty-one of the Census Code categories are void of occupational titles. None of the 12,708 civilian job titles from the DOT are cross-walked by the NOICC to these thirty-one Census Code categories. Therefore, in order to utilize the employment and earnings data contained in these thirty-one Census Code categories, worker characteristics conforming to comparable occupational titles were created. The thirty-one Census Code categories and the worker characteristics assigned to them are listed below.

JOB TITLE/#	CENSUS CODE CAT.	SVP	GED R	GED M	GED L	-APTITUDES- G	V	N	S	P	Q	K	F	M	E	C	Strength
LEGISLATORS 000.117-000	003	8	5	4	5	2	2	3	4	4	4	4	4	4	5	5	L
EARTH, ENVIRONMENTAL, AND MARINE SCIENCE TEACHERS 000.227-000	113	7	6	6	6	1	1	1	2	2	2	3	3	3	4	4	L
BIOLOGICAL SCIENCE TEACHERS 000.227-000	114	8	6	6	6	1	1	2	1	2	2	3	3	3	5	3	L
CHEMISTRY TEACHERS 000.227-000	115	8	6	5	5	1	1	1	3	3	2	3	3	3	5	3	L
PHYSICS TEACHERS 000.227-000	116	8	6	6	6	1	1	1	1	3	2	4	4	4	5	4	L
NATURAL SCIENCE TEACHERS, N.E.C. 000.227-000	117	7	5	4	5	2	2	3	3	3	3	4	4	4	5	3	L
PSYCHOLOGY TEACHERS 000.227-000	118	8	6	6	5	1	1	2	3	3	2	4	4	4	5	5	L
ECONOMICS TEACHERS 000.227-000	119	8	6	5	5	1	1	2	3	3	2	4	4	4	5	5	L
HISTORY TEACHERS 000.227-000	123	8	6	5	5	1	1	2	3	3	2	4	4	4	5	5	L
POLITICAL SCIENCE TEACHERS 000.227-000	124	8	6	5	5	1	1	2	3	3	2	4	4	4	5	5	L
SOCIOLOGY TEACHERS 000.227-000	125	8	6	5	5	1	1	2	3	3	2	4	4	4	5	5	L

JOB TITLE/#	CENSUS CODE CAT.	SVP	GED R	GED M	GED L	-APTITUDES- G	V	N	S	P	Q	K	F	M	E	C	Strength
SOCIAL SCIENCE TEACHERS, N.E.C. 000.227-000	126	8	6	5	5	1	1	2	3	3	2	4	4	4	5	5	L
ENGINEERING TEACHERS 000.227-000	127	8	6	5	5	1	1	2	2	2	2	3	3	3	5	4	L
MATHEMATICAL SCIENCE TEACHERS 000.227-000	128	8	6	5	5	1	1	2	3	3	2	4	4	4	5	5	L
COMPUTER SCIENCE TEACHERS 000.227-000	129	8	6	5	5	1	1	2	3	3	2	4	4	4	5	5	L
MEDICAL SCIENCE TEACHERS 000.227-000	133	8	6	6	6	1	1	2	1	2	2	3	2	2	5	4	L
AGRICULTURE AND FORESTRY TEACHERS 000.227-000	136	8	6	6	6	1	1	2	3	3	2	3	3	3	5	4	L
EDUCATION TEACHERS 000.227-000	139	7	6	5	5	1	1	2	3	3	2	4	4	4	5	5	L
ENGLISH TEACHERS 000.227-000	143	7	6	5	6	1	1	2	3	3	2	4	4	4	5	5	L
LAW TEACHERS 000.227-000	145	8	6	5	6	1	1	1	3	3	2	4	4	4	5	5	L
SOCIAL WORK TEACHERS 000.227-000	146	7	6	5	5	1	1	2	3	3	2	4	4	4	5	5	L
THEOLOGY TEACHERS 000.227-000	147	8	6	5	6	1	1	2	3	3	2	4	4	4	5	5	L
TRADE AND INDUSTRIAL TEACHERS 000.227-000	148	7	6	5	5	1	1	2	2	2	2	3	3	3	3	3	L
HOME ECONOMICS TEACHERS 000.227-000	149	8	6	5	5	1	1	2	3	3	2	3	3	3	4	3	L
AIRCRAFT ENGINE MECHANICS 000.281-000	508	7	4	4	4	3	3	3	2	2	4	3	3	2	4	4	M
SHEETMETAL DUCT INSTALLERS 000.361-000	596	4	3	3	3	3	4	4	3	3	4	3	3	3	4	5	M
FAMILY CHILD CARE PROVIDERS 000.677-000	466	3	3	2	3	4	4	4	4	4	4	4	4	4	4	5	M
EARLY CHILDHOOD TEACHER'S ASSISTANTS 000.677-000	467	3	3	2	3	4	4	4	4	4	4	4	4	4	4	5	M
NOT SPECIFIED MECHANICS AND REPAIRERS 000.684-000	549	4	3	2	2	3	4	4	3	3	4	3	3	3	5	5	M
MACHINE OPERATORS, NOT SPECIFIED 000.685-000	779	3	2	1	2	4	4	4	4	4	4	4	4	3	5	5	M

Database Errors

Due to its voluminous nature, the database data provided by the Department of Labor is found to contain several errors. In an effort to correct some of these errors, data for some DOT numbers were changed as follows:

DOT TITLE DOT NUMBER	ERROR	CORRECTION
Immunohematologist 078.221-010	Not cross-walked to any CCN	Renumbered DOT 078.261 -046; IMMUNOHEMATOLOGIST to 078.221-010 to coincide with DOT manuals.
Immunohematologist 078.261-046	Not in DOT Cross walked to CCN 208	Renumbered to 078.221-010 to coincide with DOT manuals.
Inst., Business Ed 090.222-010	Assigned to CCN 159	Reassigned to CCN 135 - Business, Commerce & Marketing Teachers
Teacher, Industrial Arts 091.221-010	Assigned to CCN 157	Reassigned to CCN 148 - Trade & Industrial Teachers
Instructor, Physical Education 099.224-010	Assigned to CCN 159	Reassigned to CCN 138 - Physical Education Teacher
Teacher, Art 149.021-010	Assigned to CCN 159	Reassigned to CCN 137 - Art, Drama & Music Teachers
Teacher, Drama 150.027-014	Assigned to CCN 159	Reassigned to CCN 137 - Art, Drama & Music Teachers
Teacher, Music 152.021-010	Assigned to CCN 159	Reassigned to CCN 137 - Art, Drama & Music Teachers
Consultant 189.167-010	Assigned to CCN 000	Assigned to CCN 037 - Management Related Occupations N.E.C.

Chapter 16 Worker Characteristic Structure

All of the worker characteristics available for use with VALE are listed below with a brief description. In addition, the range of values allowed for each characteristic is shown. Following this abbreviated listing is a more detailed description of the characteristics and how they interact with VALE.

CHARACTERISTIC CLASS	CHARACTERISTIC	CHARACTERISTIC VALUE
Aptitudes	G - General Learning Ability	1 to 5 (5 is low)
	V -Verbal	
	N - Numerical	
	S - Spatial	
	P - Form Perception	
	Q - Clerical Perception	
	K - Motor Coordination	
	F - Finger Dexterity	
	M - Manual Dexterity	
	E - Eye-Hand-Foot Coordination	
	C - Color Discrimination	
Census/DOT Data	Census Code	3 to 889
	Census Group	1 to 6
	DOT Code	(see the Dictionary of Occupational Titles)
Data, People, Things	Data (4th digit of DOT job number)	0 to 6 (6 is low)
	People (5th digit of DOT job number)	0 to 8 (8 is low)
	Things (6th digit of DOT job number)	0 to 7 (7 is low)
Environmental Conditions	Exposure to Weather	1 - Not Present 2 - Occasionally 3 - Frequently 4 - Constantly
	Extreme Cold	
	Extreme Heat	
	Wet and/or Humid	
	Noise Intensity Level	1 - Very Quiet 2 - Quiet 3 - Moderate 4 - Loud 5 - Very Loud

CHARACTERISTIC CLASS	CHARACTERISTIC	CHARACTERISTIC VALUE
	Vibration	1 - Not Present 2 - Occasionally 3 - Frequently 4 - Constantly
	Atmospheric Conditions	
	Proximity to Moving Mechanical Parts	
	Exposure to Electrical Shock	
	Working High, Exposed Places	
	Exposure to Radiation	
	Working with Explosives	
	Exposure to Toxic or Caustic Chemicals	
	Other Environmental Conditions	
Physical Demands	Climbing	1 - Not Present 2 - Occasionally 3 - Frequently 4 - Constantly
	Balancing	
	Stooping	
	Kneeling	
	Crouching	
	Crawling	
	Reaching	
	Handling	
	Fingering	
	Feeling	
	Talking	
	Hearing	
	Tasting/Smelling	
	Near Acuity	
	Far Acuity	
	Depth Perception	
	Accommodation	
	Color Vision	
	Field of Vision	
	Strength	1 - Sedentary 2 - Light 3 - Medium 4 - Heavy 5 - Very Heavy
Reasoning, Math, Language	Reasoning	1 to 6 (1 is low)
	Math	
	Language	
SVP	Specific Vocational Preparation	1 to 9 (1 is low)

Aptitudes

Aptitudes refer to specific capacities or abilities required of an individual in order to facilitate the learning of some task or job duty. Each job title has been assigned one of five specific levels for each of eleven aptitudes. These levels reflect equivalent amounts of the aptitudes possessed by segments of the working population, as follows:

LEVEL	DEFINITION
1	*The top ten percent of the population.* This segment of the population possesses an extremely high degree of the aptitude.
2	*The highest third exclusive of the top 10 percent of the population.* This segment of the population possesses an above average or high degree of the aptitude.
3	*The middle third of the population.* This segment of the population possesses a medium degree of the aptitude, ranging from slightly below to slightly above average.
4	*The lowest third exclusive of the bottom 10 percent of the population.* This segment of the population possesses a below average or low degree of the aptitude.
5	*The lowest 10 percent of the population.* This segment of the population possesses a negligible degree of the aptitude.

APTITUDE (VALE CHARACTERISTIC)	WHAT IT MEANS
G - General Learning	The ability to "catch on" or understand instructions and underlying principles; the ability to reason and make judgments. Closely related to doing well in school.
V - Verbal	The ability to understand meaning of words and to use them effectively. The ability to comprehend language, to understand relationships between words, and to understand meanings of whole sentences and paragraphs.
N - Numerical	The ability to perform arithmetic operations quickly and accurately.
S - Spatial	Ability to think visually of geometric forms and to comprehend the two-dimensional representation of three-dimensional objects. The ability to recognize the relationships resulting from the movement of objects in space.

APTITUDE (VALE CHARACTERISTIC)	WHAT IT MEANS
P - Form Perception	Ability to perceive pertinent detail in objects or in pictorial or graphic material. Ability to make visual comparisons and discriminations and see slight differences in shapes and shadings of figures and widths and lengths of lines.
Q - Clerical Perception	Ability to perceive pertinent detail in verbal or tabular material. Ability to observe differences in copy, to proofread words and numbers, and to avoid perceptual errors in arithmetic computation. A measure of speed of perception is required in many industrial jobs even when the job does not have verbal or numerical content.
K - Motor Coordination	Ability to coordinate eyes and hands or fingers rapidly and accurately in making precise movements with speed. Ability to make movement response accurately and swiftly.
F - Finger Dexterity	Ability to move fingers, and manipulate small objects with fingers, rapidly or accurately.
M - Manual Dexterity	Ability to move hands easily and skillfully. To work with hands in placing and turning motions.
E - Eye-Hand-Foot Coordination	Ability to move the hand and foot coordinately with each other in accordance with visual stimuli.
C - Color Discrimination	The ability to match or discriminate between colors in terms of hue, saturation, and brilliance. To identify a particular color or color combination from memory and be able to perceive harmonious or contrasting color combinations.

Examples of Usage Within VALE:

'General Learning Ability = 3'	selects jobs that require an average degree of general learning ability.
'Finger Dexterity < 3'	selects jobs that require a below average or negligible degree of finger dexterity
'Manual Dexterity <= 3'	selects jobs that require an average, below average, or negligible degree of manual dexterity.

Census/DOT Data

Census Code

In order for a job to be accessed by VALE, it must be cross-walked to one of 501 three-digit Census Code Category Numbers (CCNs). Using this variable, you may specify a range of CCNs to include or omit in a given report. Census Code categories are numbered in broken sequence beginning with '3' and ending with '889', as shown below.

CENSUS CODE	JOB TITLE
3	Legislators
4	Chief Executives/General Admin, Public
5	Administrators/Officials, Public Admin
6	Administrators, Protective Services
7	Financial Managers
8	Personnel and Labor Relations Managers
9	Purchasing Managers
13	Managers, Market/Advertising, Public Rel
14	Administrators, Educ and Related Fields
15	Managers, Medicine and Health
16	Postmasters and Mail Superintendents
17	Managers, Food Serving & Lodging Estabs
18	Managers, Properties and Real Estate
19	Funeral Directors
21	Managers, Service Organizations, NEC
22	Managers and Administrators, NEC
23	Accountants and Auditors
24	Underwriters
25	Other Financial Officers
26	Management Analysts
27	Personnel, Training, and Labor Rel Spec
28	Purchasing Agents and Buyers, Farm Prod
29	Buyers, Whsle/Retail Trade Exc Farm Prod
33	Purchasing Agents and Buyers NEC
34	Business and Promotion Agents
35	Construction Inspectors
36	Inspectors/Compliance Officers, Exc Const
37	Management Related Occupations, NEC
43	Architects
44	Aerospace Engineers
45	Metallurgical and Materials Engineers
46	Mining Engineers
47	Petroleum Engineers
48	Chemical Engineers
49	Nuclear Engineers

CENSUS CODE	JOB TITLE
53	Civil Engineers
54	Agricultural Engineers
55	Electrical and Electronic Engineers
56	Industrial Engineers
57	Mechanical Engineers
58	Marine and Naval Architects
59	Engineers, NEC
63	Surveyors and Mapping Scientists
64	Computer Systems Analysts and Scientists
65	Operations & Systems Researchers/Analysts
66	Actuaries
67	Statisticians
68	Mathematical Scientists, NEC
69	Physicists and Astronomers
73	Chemists, Except Biochemists
74	Atmospheric and Space Scientists
75	Geologists and Geodesists
76	Physical Scientists, NEC
77	Agricultural and Food Scientists
78	Biological and Life Scientists
79	Forestry and Conservation Scientists
83	Medical Scientists
84	Physicians
85	Dentists
86	Veterinarians
87	Optometrists
88	Podiatrists
89	Health Diagnosing Practitioners, NEC
95	Registered Nurses
96	Pharmacists
97	Dietitians
98	Respiratory Therapists
99	Occupational Therapists
103	Physical Therapists
104	Speech Therapists
105	Therapists, NEC
106	Physicians' Assistants
113	Earth, Environmental, Marine Sci Teachers
114	Biological Science Teachers
115	Chemistry Teachers
116	Physics Teachers
117	Natural Science Teachers, NEC
118	Psychology Teachers
119	Economics Teachers

CENSUS CODE	JOB TITLE
123	History Teachers
124	Political Science Teachers
125	Sociology Teachers
126	Social Science Teachers, NEC
127	Engineering Teachers
128	Mathematical Science Teachers
129	Computer Science Teachers
133	Medical Science Teachers
134	Health Specialties Teachers
135	Business, Commerce, Marketing Teachers
136	Agriculture and Forestry Teachers
137	Art, Drama, and Music Teachers
138	Physical Education Teachers
139	Education Teachers
143	English Teachers
144	Foreign Language Teachers
145	Law Teachers
146	Social Work Teachers
147	Theology Teachers
148	Trade and Industrial Teachers
149	Home Economic Teachers
153	Teachers, Postsecondary, NEC
154	Postsecondary Teachers, Subj Unspecified
155	Teachers, Prekindergarten & Kindergarten
156	Teachers, Elementary School
157	Teachers, Secondary School
158	Teachers, Special Education
159	Teachers, NEC
163	Counselors, Educational and Vocational
164	Librarians
165	Archivists and Curators
166	Economists
167	Psychologists
168	Sociologists
169	Social Scientists, NEC
173	Urban Planners
174	Social Workers
175	Recreation Workers
176	Clergy
177	Religious Workers, NEC
178	Lawyers
179	Judges
183	Authors
184	Technical Writers

CENSUS CODE	JOB TITLE
185	Designers
186	Musicians and Composers
187	Actors and Directors
188	Painters, Sculptors, Craftsmen, Print-Maker
189	Photographers
193	Dancers
194	Artists, Performers, Related Workers, NEC
195	Editors and Reporters
197	Public Relations Specialists
198	Announcers
199	Athletes
203	Clinical Lab Technologists/Technicians
204	Dental Hygienists
205	Health Record Technologists/Technicians
206	Radiologic Technicians
207	Licensed Practical Nurses
208	Health Technologists/Technicians, NEC
213	Electrical and Electronic Technicians
214	Industrial Engineering Technicians
215	Mechanical Engineering Technicians
216	Engineering Technicians, NEC
217	Drafting Occupations
218	Surveying and Mapping Technicians
223	Biological Technicians
224	Chemical Technicians
225	Science Technicians, NEC
226	Airplane Pilots and Navigators
227	Air Traffic Controllers
228	Broadcast Equipment Operators
229	Computer Programmers
233	Tool Programmers, Numerical Control
234	Legal Assistants
235	Technicians, NEC
243	Supervisors/Proprietors, Sales Occupation
253	Insurance Sales Occupations
254	Real Estate Sales Occupations
255	Securities/Financial Serv Sales Occup
256	Advertising & Related Sales Occupations
257	Sales Occupations, Other Business Serv
258	Sales Engineers
259	Sales Rep, Mining, Manufacturing, Wholesale
263	Sales Workers, Motor Vehicles and Boats
264	Sales Workers, Apparel
265	Sales Workers, Shoes

CENSUS CODE	JOB TITLE
266	Sales Workers, Furniture/Home Furnishings
267	Sales Workers Radio, TV, Hi-Fi, Appliances
268	Sales Workers, Hardware/Building Supplies
269	Sales Workers, Parts
274	Sales Workers, Other Commodities
275	Sales Counter Clerks
276	Cashiers
277	Street and Door-To-Door Sales Workers
278	News Vendors
283	Demonstrators, Promoters and Models, Sales
284	Auctioneers
285	Sales Support Occupations, NEC
303	Supervisors, General Office
304	Supervisors, Computer Equipment Operators
305	Supervisors, Financial Records Processing
306	Chief Communications Operators
307	Supervisors, Distrib, Schedul, Adjust Clrks
308	Computer Operators
309	Peripheral Equipment Operators
313	Secretaries
314	Stenographers
315	Typists
316	Interviewers
317	Hotel Clerks
318	Transportation Ticket/Reservation Agents
319	Receptionists
323	Information Clerks, NEC
325	Classified-Ad Clerks
326	Correspondence Clerks
327	Order Clerks
328	Personnel Clerks, Exc Payroll/Timekeeping
329	Library Clerks
335	File Clerks
336	Records Clerks
337	Bookkeepers, Accounting, Auditing Clerks
338	Payroll and Timekeeping Clerks
339	Billing Clerks
343	Cost and Rate Clerks
344	Billing, Posting, Calculat Machine Oper
345	Duplicating Machine Operators
346	Mail Preparing/Paper Handling Mach Oper
347	Office Machine Operators, NEC
348	Telephone Operators
353	Communications Equipment Oper, NEC

CENSUS CODE	JOB TITLE
354	Postal Clerks, Exc Mail Carriers
355	Mail Carriers, Postal Service
356	Mail Clerks, Exc Postal Service
357	Messengers
359	Dispatchers
363	Production Coordinators
364	Traffic, Shipping, and Receiving Clerks
365	Stock and Inventory Clerks
366	Meter Readers
368	Weighers, Measurers, Checkers & Samplers
373	Expediters
374	Material Recording, Sched Clerks, NEC
375	Insurance Adjusters, Examiners, Investig
376	Investigators and Adjusters, Exc Insuranc
377	Eligibility Clerks, Social Welfare
378	Bill and Account Collectors
379	General Office Clerks
383	Bank Tellers
384	Proofreaders
385	Data-Entry Keyers
386	Statistical Clerks
387	Teachers' Aides
389	Administrative Support Occup, NEC
403	Launderers and Ironers
404	Cooks, Private Household
405	Housekeepers and Butlers
406	Child Care Workers, Private Household
407	Private Household Cleaners and Servants
413	Supervisors, Firefighting/Fire Prev Occup
414	Supervisors, Police and Detectives
415	Supervisors, Guards
416	Fire Inspection/Fire Prev Occupations
417	Firefighting Occupations
418	Police and Detectives, Public Service
423	Sheriffs, Bailiffs, Law Enforc Officers
424	Correctional Institution Officers
425	Crossing Guards
426	Guards and Police, Exc Public Service
427	Protective Service Occupations, NEC
433	Supervisors, Food Prep/Service Occup
434	Bartenders
435	Waiters and Waitresses
436	Cooks
438	Food Counter/Fountain/Related Occupation

CENSUS CODE	JOB TITLE
439	Kitchen Workers, Food Preparation
443	Waiters/Waitresses' Assistants
444	Miscellaneous Food Preparation Occup
445	Dental Assistants
446	Health Aides, Except Nursing
447	Nursing Aides, Orderlies, and Attendants
448	Supervisors, Cleaning/Blding Serv Worker
449	Maids and Housemen
453	Janitors and Cleaners
454	Elevator Operators
455	Pest Control Occupations
456	Supervisors, Personal Service Occup
457	Barbers
458	Hairdressers and Cosmetologists
459	Attendants, Amusement/Recreation Facility
461	Guides
462	Ushers
463	Public Transportation Attendants
464	Baggage Porters and Bellhops
465	Welfare Service Aides
466	Family Child Care Providers
467	Early Childhood Teacher's Assistants
468	Child Care Workers, NEC
469	Personal Service Occupations, NEC
473	Farmers, Except Horticultural
474	Horticultural Specialty Farmers
475	Managers, Farms, Except Horticultural
476	Managers, Horticultural Specialty Farms
477	Supervisors, Farm Workers
479	Farm Workers
483	Marine Life Cultivation Workers
484	Nursery Workers
485	Supervisors, Related Agricult Occupations
486	Groundskeepers and Gardeners, Except Farm
487	Animal Caretakers, Except Farm
488	Graders and Sorters, Agricult Products
489	Inspectors, Agricultural Products
494	Supervisors, Forestry/Logging Workers
495	Forestry Workers, Except Logging
496	Timber Cutting/Logging Occupations
497	Captains & Officers, Fishing Vessels
498	Fishers
499	Hunters and Trappers
503	Supervisors, Mechanics and Repairers

CENSUS CODE	JOB TITLE
505	Automobile Mechanics
506	Automobile Mechanic Apprentices
507	Bus, Truck, Stationary Engine Mechanics
508	Aircraft Engine Mechanics
509	Small Engine Repairers
514	Automobile Body and Related Repairers
515	Aircraft Mechanics, Exc Engine
516	Heavy Equipment Mechanics
517	Farm Equipment Mechanics
518	Industrial Machinery Repairers
519	Machinery Maintenance Occupations
523	Electronic Repairers, Commun/Indust Equip
525	Data Processing Equipment Repairers
526	Household Appliance/Power Tool Repairers
527	Telephone Line Installers and Repairers
529	Telephone Installers and Repairers
533	Misc Elec/Electronic Equip Repairers
534	Heating, Air Cond, Refrigeration Mechanics
535	Camera, Watch, Musical Instrument Repairer
536	Locksmiths and Safe Repairers
538	Office Machine Repairers
539	Mechanical Controls and Valve Repairers
543	Elevator Installers and Repairers
544	Millwrights
547	Specified Mechanics and Repairers, NEC
549	Not Specified Mechanics and Repairers
553	Supervisors, Brickmasons, Stonemasons, Tile
554	Supervisors, Carpenters/Related Workers
555	Supervisors, Elec/Power Transm Installers
556	Superv Painters, Paperhangers/Plasters
557	Superv, Plumbers, Pipefitters, Steamfitters
558	Supervisors, Construction, NEC
563	Brickmasons and Stonemasons
564	Brickmason and Stonemason Apprentices
565	Tile Setters, Hard and Soft
566	Carpet Installers
567	Carpenters
569	Carpenter Apprentices
573	Drywall Installers
575	Electricians
576	Electrician Apprentices
577	Electrical Power Installers/Repairers
579	Painters, Construction and Maintenance
583	Paperhangers

CENSUS CODE	JOB TITLE
584	Plasterers
585	Plumbers, Pipefitters, and Steamfitters
587	Plumber, Pipefitter, Steamfitter Apprent
588	Concrete and Terrazzo Finishers
589	Glaziers
593	Insulation Workers
594	Paving, Surfacing, Tamping Equip Operator
595	Roofers
596	Sheetmetal Duct Installers
597	Structural Metal Workers
598	Drillers, Earth
599	Construction Trades, NEC
613	Supervisors, Extractive Occupations
614	Drillers, Oil Well
615	Explosives Workers
616	Mining Machine Operators
617	Mining Occupations, NEC
628	Supervisors, Production Occupations
634	Tool and Die Makers
635	Tool and Die Maker Apprentices
636	Precision Assemblers, Metal
637	Machinists
639	Machinists Apprentices
643	Boilermakers
644	Precision Grinders, Fitters, Tool Sharpen
645	Patternmakers and Model Makers, Metal
646	Lay-Out Workers
647	Precious Stones/Metals Workers-Jewelers
649	Engravers, Metal
653	Sheet Metal Workers
654	Sheet Metal Worker Apprentices
655	Miscellaneous Precision Metal Workers
656	Patternmakers and Model Makers, Wood
657	Cabinet Makers and Bench Carpenters
658	Furniture and Wood Finishers
659	Miscellaneous Precision Woodworkers
666	Dressmakers
667	Tailors
668	Upholsterers
669	Shoe Repairers
674	Misc Precision Apparel/Fabric Workers
675	Hand Molders and Shapers, Exc Jewelers
676	Patternmakers, Lay-Out Workers, Cutters
677	Optical Goods Workers

CENSUS CODE	JOB TITLE
678	Dental Lab/Medical Appliance Technicians
679	Bookbinders
683	Elec/Electronic Equipment Assemblers
684	Miscellaneous Precision Workers, NEC
686	Butchers and Meat Cutters
687	Bakers
688	Food Batchmakers
689	Inspectors, Testers, and Graders
693	Adjusters and Calibrators
694	Water/Sewage Treatment Plant Operators
695	Power Plant Operators
696	Stationary Engineers
699	Miscellaneous Plant and System Operators
703	Lathe/Turning Machine Set-Up Operators
704	Lathe and Turning Machine Operators
705	Milling and Planing Machine Operators
706	Punching/Stamping Press Machine Oper
707	Rolling Machine Operators
708	Drilling and Boring Machine Operators
709	Grinding, Abrading, Buffing Mach Op
713	Forging Machine Operators
714	Numerical Control Machine Operators
715	Misc Metal, Plastic, Stone, Glass Mach Op
717	Fabricating Machine Operators, NEC
719	Molding and Casting Machine Operators
723	Metal Plating Machine Operators
724	Heat Treating Equipment Operators
725	Misc Metal/Plastic Processing Mach Op
726	Wood Lathe, Routing, Planing Machine Oper
727	Sawing Machine Operators
728	Shaping and Joining Machine Operators
729	Nailing and Tacking Machine Operators
733	Miscellaneous Woodworking Machine Oper
734	Printing Press Operators
735	Photoengravers and Lithographers
736	Typesetters and Compositors
737	Miscellaneous Printing Machine Oper
738	Winding and Twisting Machine Operators
739	Knitting, Looping, Taping, Weaving Mach Op
743	Textile Cutting Machine Operators
744	Textile Sewing Machine Operators
745	Shoe Machine Operators
747	Pressing Machine Operators
748	Laundering and Dry Cleaning Machine Oper

CENSUS CODE	JOB TITLE
749	Miscellaneous Textile Machine Operators
753	Cementing and Gluing Machine Operators
754	Packaging and Filling Machine Operators
755	Extruding and Forming Machine Operators
756	Mixing and Blending Machine Operators
757	Separating, Filtering, Clarifying Mach Op
758	Compressing/Compacting Machine Operators
759	Painting/Paint Spraying Machine Oper
763	Roasting/Baking Machine Operators, Food
764	Washing/Cleaning/Pickling Machine Oper
765	Folding Machine Operators
766	Furnace/Kiln/Oven Operators, Exc Food
768	Crushing and Grinding Machine Operators
769	Slicing and Cutting Machine Operators
773	Motion Picture Projectionists
774	Photographic Process Machine Operators
777	Miscellaneous Machine Operators, NEC
779	Machine Operators, Not Specified
783	Welders and Cutters
784	Solderers and Brazers
785	Assemblers
786	Hand Cutting and Trimming Occupations
787	Hand Molding, Casting, and Forming Occup
789	Hand Printing, Coating, Decorating Occup
793	Hand Engraving and Printing Occupations
795	Miscellaneous Hand Working Occupations
796	Production Insp, Checkers, and Examiners
797	Production Testers
798	Production Samplers and Weighers
799	Graders and Sorters, Exc Agricultural
803	Supervisors, Motor Vehicle Operators
804	Truck Drivers
806	Driver-Sales Workers
808	Bus Drivers
809	Taxicab Drivers and Chauffeurs
813	Parking Lot Attendants
814	Motor Transportation Occupations, NEC
823	Railroad Conductors and Yardmasters
824	Locomotive Operating Occupations
825	Railroad Brake, Signal, and Switch Oper
826	Rail Vehicle Operators, NEC
828	Ship Captains/Mates, Except Fishing Boats
829	Sailors and Deckhands
833	Marine Engineers

CENSUS CODE	JOB TITLE
834	Bridge, Lock and Lighthouse Tenders
843	Supervisors, Material Moving Equip Oper
844	Operating Engineers
845	Longshore Equipment Operators
848	Hoist and Winch Operators
849	Crane and Tower Operators
853	Excavating and Loading Machine Operators
855	Grader, Dozer, and Scraper Operators
856	Industrial Truck/Tractor Equipment Oper
859	Miscellaneous Material Moving Equip Oper
864	Superv, Handlers, Equip Cleaners/Laborers
865	Helpers, Mechanics and Repairers
866	Helpers, Construction Traders
867	Helpers, Surveyors
868	Helpers, Extractive Occupations
869	Construction Laborers
874	Production Helpers
875	Garbage Collectors
876	Stevedores
877	Stock Handlers and Baggers
878	Machine Feeders and Offbearers
883	Freight/Stock/ Material Handlers, NEC
885	Garage/Service Station Related Occup
887	Vehicle Washers and Equipment Cleaners
888	Hand Packers and Packagers
889	Laborers, Except Construction

Example of Usage Within VALE:

'Census Code > 389' selects from only those jobs in Census Code categories 403 through 889. Note that this produces the same result as 'Group > 2' (refer to the definition of 'Census Group').

Census Group

The Census Group number of a job represents the broad occupational category under which the job is classified. The one-page VALE summary provided with all VALE reports lists job selections by these six broad occupational categories (groups):

GROUP NUMBER	OCCUPATIONAL CATEGORY
1	Managerial and Professional Specialty Occupations (contains Census Code Numbers (CCNs) 3 through 199)
2	Technical, Sales, and Administrative Support Occupations (contains CCNs 203 through 389)
3	Service Occupations (contains CCNs 403 through 469)
4	Farming, Forestry, and Fishing Occupations (contains CCNs 473 through 499)
5	Precision Production, Craft, and Repair Occupations (contains CCNs 503 through 699)
6	Operators, Fabricators, and Laborers (contains CCNs 703 through 889)

Examples of Usage Within VALE:

'Census Group = 4'	selects only those jobs in group 4.
'Census Group > 4'	selects only those jobs in groups 5 through 6.
'Census Group >= 4'	selects only those jobs in groups 4 through 6.

DOT Code

Using this characteristic, you may specify a range of DOT job numbers to include or omit in a given report. You will rarely make selections using this variable. Instead, the 'Census Group' or 'Census Code' characteristics (explained in the preceding sections) may be easier to use and usually yield the same result.

Example of Usage Within VALE:

'DOT Code Between 250.157-010 and 299.687-014'	selects jobs from DOT number 250.157-010 (Superintendent, Sales) through DOT number 299.687-014 (Sandwich-Board Carrier). Note that this range includes all sales occupations.

Data, People, Things

The middle three digits of the DOT occupational code are the worker functions ratings of the tasks performed in the occupation. Every job requires a worker to function to some degree in relation to data, people, and things. A separate digit expresses the worker's relationship to each of these three groups.

Worker functions involving more complex responsibility and judgment are assigned lower numbers in these three lists while functions which are less complicated have higher numbers. For example, "synthesizing" and "coordinating" data are more complex tasks than "copying" data; "instructing" people involves a broader responsibility than "taking instructions-helping"; and "operating" things is a more complicated task than "handling" things.

DATA	PEOPLE	THINGS
0 Synthesizing	0 Mentoring	0 Setting Up
1 Coordinating	1 Negotiating	1 Precision Working
2 Analyzing	2 Instructing	2 Operating-Controlling
3 Compiling	3 Supervising	3 Driving-Operating
4 Computing	4 Diverting	4 Manipulating
5 Copying	5 Persuading	5 Tending
6 Comparing	6 Speaking-Signaling	6 Feeding-Offbearing
	7 Serving	7 Handling
	8 Taking Instructions - Helping	

Examples of Usage Within VALE:

'Data = 3'	selects jobs that require data compilation.
'People < 5'	selects jobs that require interaction with people, from taking instructions or helping to speaking or signaling.
'Things <= 4'	selects jobs that require interaction with things, from handling to manipulating.

Value Levels for Environmental Conditions and Physical Demands

Analysts use the following symbols to indicate the absence or presence (and when present, the frequency of occurrence) of the Environmental Conditions and Physical Demands (except strength).

CODE	FREQUENCY	DEFINITION
1	Not Present	Activity or condition does not exist.
2	Occasionally	Activity or condition exists up to 1/3 of the time.
3	Frequently	Activity or condition exists from 1/3 to 2/3 of the time.
4	Constantly	Activity or condition exists 2/3 or more of the time.

Environmental Conditions

Environmental conditions are the physical surroundings of a worker in a specific job. Following is a list of the variables used by VALE.

ENVIRONMENTAL CONDITIONS (VALE CHARACTERISTIC)	WHAT IT MEANS
Exposure to Weather	Exposure to outside atmospheric conditions.
Extreme Cold	Exposure to non weather-related cold temperatures.
Extreme Heat	Exposure to non weather-related hot temperatures.
Wet and/or Humid	Contact with water or other liquids or exposure to non weather-related humid conditions.
Noise Intensity Level	The noise intensity level to which the worker is exposed in the job environment. This factor is expressed by one of five levels. Consider all the benchmarks within a level as providing an insight into the nature of the specific levels. **Level** — **Illustrative Examples** Very Quiet — isolation booth for hearing test; deep sea diving; forest trail Quiet — library, many private offices; funeral reception, golf course, art museum Moderate — business office where typewriters are used; department store; grocery store; light traffic; fast food restaurant at off-hours Loud — can manufacturing department; large earth-moving equipment, heavy traffic Very Loud — rock concert - front row; jackhammer work, rocket engine testing area during test
Vibration	Exposure to shaking object or surface.
Atmospheric Conditions	Exposure to conditions such as fumes, noxious odors, dusts, mists, gases, and poor ventilation, that affect the respiratory system, eyes, or the skin.
Proximity to Moving Mechanical Parts	Exposure to possible bodily injuries from moving mechanical parts of equipment, tools, or machinery.
Exposure to Electrical Shock	Exposure to possible bodily injury from electrical shock.
Working in High Exposed Places	Exposure to possible bodily injury from falling.
Exposure to Radiation	Exposure to possible bodily injury from radiation.

ENVIRONMENTAL CONDITIONS (VALE CHARACTERISTIC)	WHAT IT MEANS
Working with Explosives	Exposure to possible injury from explosions.
Exposure to Toxic or Caustic Chemicals	Exposure to possible bodily injury from toxic or caustic chemicals.
Other Environmental Condition	

Examples of Usage Within VALE:

'Exposure to Weather = 2 - Occasional	selects jobs where the exposure to weather is on an occasional basis.
'Exposure to Weather < 3 - Frequently	selects jobs where the exposure to weather is not present or is on an occasional basis.

Physical Demands

The physical demands used with VALE serve as a means of expressing both the physical requirements of the job and the physical capacities (specific physical traits) a worker must have to meet those required by many jobs, and also the name of a specific capacity possessed by many people. The worker must possess physical capacities at least in an amount equal to the physical demands made by the job.

PHYSICAL DEMAND (VALE CHARACTERISTIC)	WHAT IT MEANS
Climbing	Ascending or descending ladders, stairs, scaffolding, ramps, poles, and the like, using feet and legs or hands and arms. Body agility is emphasized.
Balancing	Maintaining body equilibrium to prevent falling when walking, standing, crouching, or running on narrow, slippery, or erratically moving surfaces; or maintaining body equilibrium when performing gymnastic feats.
Stooping	Bending body downward and forward by bending spine at the waist, requiring full use of the lower extremities and back muscles.
Kneeling	Bending legs at knees to come to rest on knee or knees.
Crouching	Bending body downward and forward by bending legs and spine.
Crawling	Moving about on hands and knees or hands and feet.

PHYSICAL DEMAND (VALE CHARACTERISTIC)	WHAT IT MEANS
Reaching	Extending hand(s) and arm(s) in any direction.
Handling	Seizing, holding, grasping, turning, or otherwise working with hand or hands. Fingers are involved only to the extent that they are an extension of the hand, such as to run a switch or shift automobile gears.
Fingering	Picking, pinching, or otherwise working primarily with fingers rather than with the whole hand or arm as in handling.
Feeling	Perceiving attributes of objects, such as size, shape, temperature, or texture, by touching with skin, particularly that of fingertips.
Talking	Expressing or exchanging ideas by means of the spoken word to impart oral information to clients or to the public and to convey detailed spoken instructions to other workers accurately, loudly, or quickly.
Hearing	Perceiving the nature of sounds by ear.
Tasting/Smelling	Distinguishing, with a degree of accuracy, differences or similarities in intensity or quality of flavors or odors, or recognizing particular flavors or odors, using tongue or nose.
Near Acuity	Clarity of vision at 20 inches or less.
Far Acuity	Clarity of vision at 20 feet or more.
Depth Perception	Three-dimensional vision. Ability to judge distances and spatial relationships so as to see objects where and as they actually are.
Accommodation	Adjustment of lens of eye to bring an object into sharp focus. This factor is required when doing near point work at varying distances from the eye.
Color Vision	Ability to identify and distinguish colors.
Field of Vision	Observing an area that can be seen up and down or to right and left while eyes are fixed on a given point.

The strength factor is expressed in terms of *Sedentary, Light, Medium, Heavy,* and *Very Heavy.* It is measured by involvement of the worker with one or more of the following activities:

a. Worker position(s):
   1) Standing: Remaining on one's feet in an upright position at a workstation without moving about.
   2) Walking: Moving about on foot.

3) Sitting: Remaining in the normal seated position.

b. Worker movement of objects (including extremities used):
   1) Lifting: Raising or lowering an object from one level to another (includes upward pulling).
   2) Carrying: Transporting an object, usually holding it in the hands or arms or on the shoulder.
   3) Pushing: Exerting force upon an object so that the object moves away from the force (includes slapping, striking, kicking, and treadle actions).
   4) Pulling: Exerting force upon an object so that the object moves toward the force (includes jerking).

Five Degrees of Strength

STRENGTH LEVEL	**WHAT IT MEANS**
Sedentary	Sedentary work involves exerting up to 10 pounds of force occasionally or a negligible amount of force frequently to lift, carry, push, pull, or otherwise move objects, including the human body. Sedentary work involves sitting most of the time, but may involve walking or standing for brief periods of time. Jobs may be defined as Sedentary when walking and standing are required only occasionally and all other Sedentary criteria are met.
Light	Light work involves exerting up to 20 pounds of force occasionally, or up to 10 pounds of force frequently, or a negligible amount of force constantly to move objects. Physical demand requirements are in excess of those for Sedentary work. Even though the weight lifted may be only a negligible amount, a job/occupation is rated Light work when it requires: (1) walking or standing to a significant degree; (2) sitting most of the time while pushing or pulling arm or leg controls; or (3) working at a production rate pace while constantly pushing or pulling materials even though the weight of the materials is negligible. (The constant stress and strain of maintaining a production rate pace, especially in an industrial setting, can be and is physically demanding of a worker even though the amount of force exerted is negligible.)
Medium	Medium work involves exerting 20 to 50 pounds of force occasionally, or 10 to 25 pounds of force frequently, or an amount greater than negligible and up to 10 pounds constantly to move objects. Physical demand requirements are in excess of those for Light work.

STRENGTH LEVEL	WHAT IT MEANS
Heavy	Heavy work involves exerting 50 to 100 pounds of force occasionally, or 25 to 50 pounds of force frequently, or 10 to 20 pounds of force constantly to move objects. Physical demand requirements are in excess of those for Medium work.
Very Heavy	Very Heavy work involves exerting in excess of 100 pounds of force occasionally, or in excess of 50 pounds of force frequently, or in excess of 20 pounds of force constantly to move objects. Physical demand requirements are in excess of those for Heavy work.

Limits of Weights Lifted/Carried or Force Exerted

RATING	OCCASIONALLY	FREQUENTLY	CONSTANTLY
Sedentary	*-10	*	N/A
Light	*-20	*-10	*
Medium	20-50	10-25	*-10
Heavy	50-100	25-50	10-20
Very Heavy	100+	50+	20+

* = negligible weight; N/A - Not Applicable

In the preceding chart, lifting, pushing, and pulling are expressed in terms of both intensity and duration. Judgments regarding intensity involve consideration of the weight handled, position of the worker's body or the part of the worker's body used in handling weights, and the aid given by helpers or by mechanical equipment. Duration is the total time spent by the worker in carrying out these activities. Carrying most often is expressed in terms of duration, weight carried, and distance carried. This information is summarized in the table below.

The range excludes the lower number and includes the higher number, i.e., the range 10-25 excludes 10 (begins at 10+) and includes 25. Overlapping ranges of *-10 in the Occasionally column for Sedentary work and Light work occupations are differentiated on the basis of the worker's posture and the rate at which work is performed. For example, all Sedentary occupations involve sitting constantly. However, in some occupations workers sit constantly but exert force of an amount or at a frequency rate that exceeds those for Sedentary work. Such occupations are, therefore, rated at least for Light work.

Examples of Usage Within VALE:

'Strength = 3 - Medium' selects jobs that require the physical demands of medium work only (this does *not* select jobs that require sedentary and light work).

'Strength <> 5 -Very Heavy'	selects jobs that require sedentary, light, medium, and heavy work ('<>' is the same as 'not equal to').
'Strength <= 2 - Light'	selects jobs that require either sedentary or light work.
'Climbing = 2 - Occasionally'	selects jobs that require climbing on an occasional basis.
'Balancing <= 3 - Frequently'	selects jobs that do not require balancing or require it on an occasional or frequent basis.

Reasoning, Math, Language

Reasoning, Math, and Language represent General Educational Development (GED) levels. GED embraces those aspects of education (formal and informal) which contribute to the worker's (a) reasoning development and ability to follow instructions, and (b) acquisition of "tool" knowledges such as language and mathematical skills. This is education of a general nature which does not have a recognized, fairly specific occupational objective. Ordinarily, such education is obtained in elementary school, high school, or college. However, it derives also from experience and self-study.

As noted above, GED involves three types of skill: reasoning (R), mathematics (M), and language (L). Each skill is further defined in terms of six levels, as outlined on the following page.

Examples of Usage Within VALE:

'Reasoning = 3'	selects only jobs that require a reasoning level of 3.
'Math < 3'	selects only jobs that require math levels of 1 or 2.
'Language <= 3'	selects only jobs that require language levels 1, 2, or 3.

LEVEL	REASONING DEVELOPMENT	MATHEMATICAL DEVELOPMENT	LANGUAGE DEVELOPMENT
6	Apply principles of logical or scientific thinking to a wide range of intellectual and practical problems. Deal with nonverbal symbolism (formulas, scientific equations, graphs, musical notes, etc.) in its most difficult phases. Deal with a variety of abstract and concrete variables. Apprehend the most abstruse classes of concepts.	Advanced Calculus: Work with limits, continuity, real number systems, mean value theorems, and implicit function theorems. Modern Algebra: Apply fundamental concepts of theories of groups, rings, and fields. Work with differential equations, linear algebra, infinite series, advanced operations methods, and functions of real and complex variables. Statistics: Work with mathematical statistics, mathematical probability and applications, experimental design, statistical inference, and econometrics.	Same as Level 5
5	Apply principles of logical or scientific thinking to define problems, collect data, establish facts, and draw valid conclusions. Interpret an extensive variety of technical instructions in mathematical or diagrammatic form. Deal with several abstract and concrete variables.	Algebra: Work with exponents and logarithms, linear equations, quadratic equations, mathematical induction and binomial theorem, and permutations. Calculus: Apply concepts of analytic geometry, differentiations, and integration of algebraic functions with applications. Statistics: Apply mathematical operations to frequency distributions, reliability and validity of tests, normal curve, analysis of variance, correlation techniques, chi-square application and sampling theory, and factor analysis.	Reading: Read literature, book and play reviews, scientific and technical journals, abstracts, financial reports, and legal documents. Writing: Write novels, plays, editorials, journals, speeches, manuals, critiques, poetry, and songs. Speaking: Conversant in the theory, principles, and methods of effective and persuasive speaking, voice and diction, phonetics, and discussion and debate.

LEVEL	REASONING DEVELOPMENT	MATHEMATICAL DEVELOPMENT	LANGUAGE DEVELOPMENT
4	Apply principles of rational systems to solve practical problems and deal with a variety of concrete variables in situation where only limited standardization exists. Interpret a variety of instructions furnished in written, oral, diagrammatic, or schedule form. (Examples of rational systems include: bookkeeping, internal combustion engines, electric wiring systems, house building, farm management, and navigation)	Algebra: Deal with system of real numbers, linear, quadratic, rational, exponential, logarithmic, angle and circular functions, and inverse functions; related algebraic solution of equations and inequalities; limits and continuity; and probability and statistical inference. Geometry: Deductive axiomatic geometry, plane and solid, and rectangular coordinates. Shop Math: Practical application of fractions, percentages, ratio and proportion, measurement, logarithms, practical algebra, geometric construction, and essentials of trigonometry.	Reading; Read novels, poems, newspapers, periodicals, journals, manuals, dictionaries, thesauruses, and encyclopedias. Writing: Prepare business letters, expositions, summaries, and reports, using prescribed format and conforming to all rules of punctuation, grammar, diction, and style. Speaking: Participate in panel discussions, dramatizations, and debates. Speak extemporaneously on a variety of subjects.
3	Apply commonsense understanding to carry out instructions furnished in written, oral, or diagrammatic form. Deal with problems involving several concrete variables in or from standardized situations.	Compute discount, interest, profit, and loss; commission, markup, and selling price; ratio and proportion; and percentage. Calculate surfaces, volumes, weights, and measures. Algebra: Calculate variables and formulas; monomials and polynomials; ratio and proportion variables; and square roots and radicals. Geometry: Calculate plane and solid figures, circumference, area, and volume. Understand kinds of angles and properties of pairs of angles.	Reading: Read a variety of novels, magazines, atlases, and encyclopedias. Read safety rules, instructions in the use and maintenance of shop tools and equipment, and methods and procedures in mechanical drawing and layout work. Writing: Write reports and essays with proper format, punctuation, spelling, and grammar, using all parts of speech. Speaking: Speak before an audience with poise, voice control, and confidence, using correct English and well-modulated voice.

LEVEL	REASONING DEVELOPMENT	MATHEMATICAL DEVELOPMENT	LANGUAGE DEVELOPMENT
2	Apply commonsense understanding to carry out detailed but uninvolved written or oral instructions. Deal with problems involving a few concrete variables in or from standardized situations.	Add, subtract, multiply, and divide all units of measure. Perform the four operations with like common and decimal fractions. Compute ratio, rate, and percent. Draw and interpret bar graphs. Perform arithmetic operation involving all American monetary units.	Reading: Passive vocabulary of 5,000-6,000 words. Read at rate of 190-215 words per minute. Read adventure stories and comic books, looking up unfamiliar words in dictionary for meaning, spelling, and pronunciation. Read instructions for assembling model cars and airplanes. Writing: Write compound and complex sentences, using cursive style, proper end punctuation, and employing adjectives and adverbs. Speaking: Speak clearly and distinctly with appropriate pauses and emphasis, correct pronunciation, variations in word order, using present perfect, and future tenses.
1	Apply commonsense understanding to carry out simple one- or two-step instructions. Deal with standardized situations with occasional or no variables in or from these situations encountered on the job.	Add and subtract two-digit numbers. Multiply and divide 10's and 100's by 2, 3, 4, 5. Perform the four basic arithmetic operations with coins as part of a dollar. Perform operations with units such as cup, pint, and quart; inch, foot, and yard; and ounce and pound.	Reading: Recognize meaning of 2,500 (two- or three-syllable) words. Read at rate of 95-120 words per minute. Compare similarities and differences between words and between series of numbers. Writing: Print simple sentences containing subject, verb, and object, and series of numbers, names, and addresses. Speaking: Speak simple sentences, using normal word order, and present and past tenses.

SVP (Specific Vocational Preparation)

The SVP represents the amount of time required to learn the techniques, acquire information, and develop the facility needed for average performance in a specific job-worker situation. The training may be acquired in a school, work, military, vocational, or an institutional environment. It does not include orientation training required of every fully qualified worker to become accustomed to the special conditions of any new job. Specific vocational training includes training given in any of the following circumstances:

a. Vocational education (such as high school commercial or shop training, technical school, art school, and that part of college training which is organized around a specific vocational objective);

b. Apprentice training (for apprenticeable jobs only);

c. In-plant training (given by an employer in the form of organized classroom study);

d. On-the-job training (serving as a learner or trainee on the job under the instruction of a qualified worker);

e. Essential experience in other jobs (serving in less responsible jobs which lead to the higher grade job or serving in other jobs that qualify).

Below is an explanation of the various levels of Specific Vocational Preparation.

LEVEL	TIME
1	Short demonstration
2	Anything beyond short demonstration up to and including 30 days.
3	Over 30 days up to and including 3 months.
4	Over 3 months up to and including 6 months.
5	Over 6 months up to and including 1 year.
6	Over 1 year up to and including 2 years.
7	Over 2 years up to and including 4 years.
8	Over 4 years up to and including 10 years.
9	Over 10 years.

Examples of Usage Within VALE:

'SVP = 3'	selects only jobs that require SVP at level 3.
'SVP < 3'	selects jobs that require SVP at levels 1 or 2.
'SVP <= 3'	selects jobs that require SVP at levels 1, 2, or 3.
'SVP Between 3 and 6'	selects jobs that require SVP at levels 3, 4, 5, or 6.

Specific Worker Characteristic Details

See *The Revised Handbook for Analyzing Jobs* (1991). U.S. Department of Labor, Employment and Training Administration. ISBN: 1-56370-051-4.

Logical Operators

Below is a list of the Logical Operators available for use when selecting Worker Characteristics in the VALE program. The operators provide a means of selecting the specific Characteristic Value you wish to use for the Worker Characteristic you have chosen.

LOGICAL OPERATORS	WHAT IT MEANS
=	Is Equal To
>	Is Greater Than
<	Is Less Than
>=	Is Greater Than or Equal To
<=	Is Less Than or Equal To
Between	Is Between Two Values (note that this includes the endpoints of the range you select)
<>	Is Not Equal To

Chapter 17 VALE Calculations

Every time VALE is used, the program scans 12,739 job titles. Each of the job titles from the DOT is cross-referenced by the worker characteristics needed to satisfactory perform work in the occupation. The U.S. Department of Labor, Employment and Training Administration, assigns these characteristics. Each of these job titles is cross-walked to one of 501 Census Code categories by the National Crosswalk Service Center, which is an agent of the National Occupational Information Coordinating Committee. Furthermore, each Census Code category is clustered within one of six broad occupational groups.

Scanning the DOT

Assume that you wish to perform a VALE run search of all occupations requiring an average level of general learning ability (General Learning Ability at level 3, the middle one-third of the general population). The first thing VALE examines is the G-aptitude of each of the DOTs contained in the first three-digit Census Code category. Assume that VALE finds ten of these job titles in the first three-digit Census Code category. VALE will inspect each of these ten job titles to see how many are defined by the Department of Labor as requiring a G-aptitude of 3. If four of these ten job titles require a G-aptitude of 3, VALE estimates a person with an average level of general learning ability will be able to satisfactorily perform work in forty percent (four out of every ten) of all jobs available in the first Census Code category.

At this point, VALE will find the number of people employed in jobs classified under the first Census Code category. Let us assume that 100 people are employed in the local labor market within the first Census Code category. Since VALE estimated that 40 percent of the people employed in this Census Code Category are performing work requiring a G-aptitude of 3, it will report that 40 of these 100 employed people have jobs requiring an average level of general learning ability. It also estimates that all of the 40 selected workers earn the average earnings for all workers in the first Census Code. Once VALE has estimated labor market access and earnings within the first Census Code category, it will repeat this process for the remaining 500 Census Code categories.

Compilation of Results

When all 12,739 job titles have been processed by Census Code category, VALE begins the task of compiling its findings. VALE now focuses on the six broad occupational groups. All Census Code categories cross-referenced to the first broad occupational group are identified. The 40 employed persons selected in the above example are added

to the selection results of the other Census Code categories within the first broad occupational group. The process is repeated for the remaining five groups. The six results are then reported in a summary table. This table reports the total number of workers employed, the percent employed, the number of workers selected, and the percent selected in each of the six broad occupational groups for the relevant labor market.

VALE can report either median or mean earnings. Let us begin by examining how VALE computes median earnings. Assume that only the following small sample was selected from a national run:

Census Code Category Number	Selected Number of Employed Persons	Census Code Category Median Annual Earnings
205	16,653	$19,517
206	9,267	$29,208
207	245,091	$22,634
208	145,457	$22,552

When sorted in ascending order by median annual earnings, the following data are obtained:

Census Code Category Number	Selected Number of Employed Persons	Census Code Category Median Annual Earnings
205	16,653	$19,517
208	145,457	$22,552
207	245,091	$22,634
206	9,267	$29,208
	416,468	

VALE then determines the midpoint of all selected employed persons ({416,468 divided by 2}+ 1 = 208,235[2]) and proceeds to determine the Census Code category which contains the midpoint worker once earnings are sorted from smallest to largest. This is the first Census Code category of the sorted data where the cumulative frequency (total

[2] To determine the "midpoint worker," VALE first takes the total selected number of employed persons and divides it by two. It then takes this number and adds one to it. The first integer greater than or equal to this result is the "midpoint worker." Therefore, if the total selected number of employed persons is an even number, like 416468, then the midpoint worker is one more than half of 416468 or 208235. If the total number selected happened to be an odd number, like 416467, then half of this number plus one equals 208234.5. VALE will go to the next largest integer, 208235, and consider that worker the midpoint worker.

number of selected persons in a Census Code category or previous Census Code category) equals or exceeds 208,235.

Using the example above, the highest Census Code category of the rank-ordered data contains 9,267 people. Since there are no previous categories before this one, the cumulative frequency for Census Code category 206 is simply 9,267. This cumulative frequency is less than 208,235 so it is not the Census Code category containing the midpoint worker. The second highest rank-ordered Census Code category has 245,091 employed persons. The cumulative frequency for this category is the total number of people in the first two categories combined which is 9,267 + 245,091 = 254,358. This cumulative frequency does exceed 208,235 indicating that the midpoint worker is somewhere in Census Code category 207. In this case VALE would report annual median earnings of $22,634. This median level of annual earnings would be for all people in the United States working at jobs requiring an average degree of general learning ability.

Now let us assume that you are interested in mean annual earnings instead of median annual earnings. Assume that only the following small sample was selected from a national run:

Census Code Category Number	Selected Number of Employed Persons	Census Code Category Mean Weekly Earnings
205	16,653	$19,517
206	9,267	$29,208
207	245,091	$22,634
208	145,457	$22,552
	416,468	

Computing mean annual earnings does not require sorting of the data. However, one cannot simply add the four numbers in the Census Code Category Mean Weekly Earnings column together and divide by four to get mean annual earnings. This would be incorrect because this calculation would give equal weight to the mean earnings in each of the four Census Code categories. Clearly a larger percentage of people perform work in Census Code category 207 than Census Code category 206.

In this situation, VALE computes a weighted average (WA). A simple way to compute this weighted average is to sum together the total earnings of people in each of the four Census Code categories and divide by the total number of selected employed persons. In the example above, the total amount of earnings for the selected people working in Census code category 205 is simply the average earnings for that occupational category multiplied by the selected number of workers in that occupational category. In this example, that would be $19,517 * 16,653 or $325,016,601. If we do this for the remaining three Census Code categories, add the four figures together, and divide by the total number of selected employed persons, we will have calculated the weighted average. In this example, the weighted average is:

WA = (($19,517 * 16,653) + ($29,208 * 9,267) + ($22,634 * 245,091) +

($22,552 * 145,457)) / 416,468

= $22,627

This mean level of annual earnings would be for all people in the United States working at jobs requiring an average degree of general learning ability.

Chapter 18 Worklife Probability Sources and Calculations

Worklife expectancies in *VALE 2000* are computed using the "LPE" model. This model computes a person's probability of working in any particular year by combining his or her probabilities of life (L), participation (P), and employment (E) into a joint probability. This appendix documents the source and derivation of these probabilities and demonstrates the computation of a sample worklife expectancy statistic.

Probability of Life

The first building block of our worklife expectancy statistics is the probability of life (the "L" of the LPE model). As we project the probability that a given person will be employed several years in the future, we must weight this by the probability he or she will still be alive.

To do this, we employ the Life Survivors Data from Figure 62.[3] Extracted from the National Center for Health Statistics, this table projects the number of persons of each gender still alive at a given age. For both genders, the starting point was 100,000 live births.

We can use these values to determine the probability that a person of age x will live to age y. For example, the probability that a male aged 25 (x) will live to the age of 70 (y) is determined by dividing the number of survivors at the age of 70 by the number at the age of 25, or 68,632 ÷ 97,704 = 0.702. That is, the formula applied to determine the probability of life at age y, given a current age of x, for each future year is:

$$P(L) = \frac{Surv_y}{Surv_x}$$

Thus, when computing a worklife statistic for a given age (x), the above formula is applied for each subsequent age, substituting the appropriate number of survivors at age y, while holding the number at age x constant. This is demonstrated in Figure 59 in the "LPE Applied" section of this appendix.

[3] This table is gender-, not education-specific for the United States population as a whole. Thus, the probabilities of life are not education-specific.

Participation and Employment Rates

The Annual Demographic Survey, or March supplement, of the Current Population Survey (CPS) is the source of the probabilities of participation and employment used to derive the worklife expectancy statistics. Specifically, the public use data files from this survey for 1992 through 2001 were pooled to produce the needed statistics, as summarized in Figure 63.

To ease the discussion and computation of these statistics, the joint probability of participation and employment (PE) is more simply stated as the fraction (in decimal terms) of the respective population that is employed. Thus, a PE rate of 0.750 for a particular group of the population indicates that 75% of the people in this group are employed, with the remaining 25% being either unemployed or out of the labor force.

The process of pooling the observations from the 10 years of CPS data to compute PE rates is documented on the Vocational Economics web site.[4] For demonstrative purposes, Figure 56 presents an extract from Table 5 for Males between the age of 55 and 64 with less than a High School degree and no work disability.

	Not Disabled		
	Est. Pop. (000)		
Year	Total	Empl.	n
Age Group: 55 to 64 Years Old			
1992	1,836	1,311	1,119
1993	1,685	1,207	979
1994	1,469	1,034	868
1995	1,332	965	801
1996	1,431	1,073	727
1997	1,383	1,037	689
1998	1,252	968	639
1999	1,269	977	620
2000	1,244	960	634
2001	1,211	897	614
	14,112	**10,429**	**7,690**
PE	**0.739**		

Figure 56 Computation of PE Rate from Pooled CPS Years

In this exhibit, one line is listed for each of the 10 pooled years. The "Total" column reflects the estimated total population size (in thousands) for this particular cell, using the CPS official weights. The "Empl." column provides the estimated number of people (in thousands) in this cell that was employed at the time of the respective survey. Finally, the "n" column depicts the actual number of cell observations in the CPS. Using 2001 as an example, approximately 1,211,000 (Total) males were between the age of 55 and 64 with less than a High School degree and no work disability. Of this group, 897,000 (Empl.) were employed in March of 2001. The Census Bureau derived these quantities from a sample size of 614 (n) individuals.

[4] http://www.vocecon.com/technical/ftp/data/appdpe.pdf

These three quantity columns are summed for the 10 pooled years, resulting in totals of 14,112,000 (Total), 10,429,000 (Empl.), and 7,690 (n). The average PE rate for these years is then computed simply by dividing the total number employed (10,429,000) by the total estimated population sizes (14,112,000), or 0.739. Stated more simply, for the 10 years ended in 2001, approximately 73.9% of males between the age of 55 and 64 with less than a High School degree and no work disability were employed.

This process is repeated for each potential combination of gender, age, education, and disability status. The resulting PE's are extracted and summarized in Figure 63 on page 130.

Insufficient Observations

An observant reader might notice that the above description of the PE computation process meticulously computes the total number of observations (n) in the 10 pooled years, but makes no use of it. Actually, this quantity plays an important role in monitoring our PE statistics to protect against potential distortion from small sample sizes.

When considering the categorization for two genders, four levels of education, eight age groups, and three disability categories, our computations subdivide our sample into 192 different cells. As a result, some of the cells for those with a work disability will have a limited number of observations – perhaps so limited as to give an unreliable estimate of the true rate of employment.

To remedy this situation, we identified all cells with fewer than 40 pooled observations, and imputed a revised estimate as follows:

- A "Disability Ratio" for the appropriate gender and age group was computed by comparing the average employment rate for persons with a work disability to the rate for those with no work disability. This ratio is computed for each of the severe and not severe work disability categories.
- This Disability Ratio is multiplied by the corresponding rate of employment for a person of the same age, education, and gender with no work disability.

Figure 57 details the five cells adjusted in this manner. For each cell, we present the original sample size, the employment rate computed from that sample size, the rate for those with no work disability, the disability ratio, and the imputed PE rate substituted for the original estimate. Consider the first entry for an example. Males between 16 and 24, with at least a baccalaureate degree and a not severe work disability, had only 29 (n) observations. Using the CPS weights, these 29 individuals showed an employment rate of 0.716 (Original Rate). The observed employment rate for males of the same age and education, but with no work disability was 0.814 (Non-Dis. Rate). In general, all males with a not severe work disability of this same age have rates of employment that are 94.2% (Disab. Ratio) of their counterparts without a disability. Since the sample size is small, we discard the original rate and impute the employment rate to be used by multiplying the nondisabled rate by the disability ratio, resulting in 0.767 (Imputed Rate).

Gender	Education	Disability Status	Age Group	n	Original Rate	Non-Dis. Rate	Disab. Ratio	Imputed Rate
Male	College Degree	Disabled, Not Sev.	16 to 24	29	0.716	0.814	94.2%	0.767
Male	College Degree	Disabled, Severe	16 to 24	13	0.452	0.814	27.2%	0.221
Male	College Degree	Disabled, Severe	85 to 89	26	0.000	0.110	0.0%	0.000
Male	Some College	Disabled, Severe	85 to 89	25	0.000	0.048	0.0%	0.000
Female	College Degree	Disabled, Severe	16 to 24	29	0.241	0.851	32.3%	0.275

Figure 57 Adjustment for Insufficient Observations

CPS Extraction

The process employed to derive the quantities and PE rates is identical to that used by the Census Bureau in its disability cross-tabulations.[5] One could compute the PE rate for any specific year of a cell by dividing the total employed by the estimated population size from a cell. The resulting rate should match that shown by the Census Bureau in its Table 2 of cross-tabulations, using the "Percent Employed – Total" column of the Census table. The exceptions here will be for 1992-1994, which are not posted on the Census web site, and for the 75-84 and 85-89 age groups, which are not included in the Census Table 2.

Note also, that when using Census Table 2, statistics for those with a not severe work disability must be imputed using data from the "With a work disability" and "With a severe work disability" categories. Since the former category includes persons with both a severe and a not severe work disability, subtracting the latter from it results in a category of workers with a not severe work disability.

For those that wish to replicate the extraction from the CPS data files, Figure 58 identifies the key variables used to select and categorize the responses.

Figure 58 CPS Extraction Variables

Variable	Description
A-Sex	Gender, where 1 identifies Males and 2 identifies females
A-HGA	Highest grade achieved: 31-38 indicate less than a high school degree, 39 indicates a high school degree or equivalent, 40-42 indicates some college below baccalaureate, and 43-46 indicates baccalaureate or higher
A-Age	Age
PEMLR	Monthly Labor Force Recode, where values of 1 or 2 indicate employed workers
MarSupWt	March supplement Weight – approximate population size represented by each observation

[5] http://www.census.gov/hhes/www/disable/disabcps.html

Variable	Description
Dis-HP	Health problem or a disability which prevents or limits working; corresponds to the 1st disability criteria in Chapter 3 when equal to 1
Dis-CS	Retire or leave a job for health reasons; corresponds to the 2nd disability criteria in Chapter 3 when equal to 1
Vet-Typ1	Veterans disability payments; corresponds to the 3rd disability criteria in Chapter 3 when equal to 1
RsnNotW	Illness or disability reason for not working; corresponds to the 4th disability criteria in Chapter 3 when equal to 1
PEMLR	Monthly Labor Force Recode, prevented from working due to disability; corresponds to the 5th disability criteria in Chapter 3 when equal to 6
MCare	Medicare coverage; corresponds to the 6th disability criteria in Chapter 3 when equal to 1 and age below 65
SSIVal	Supplemental Security income; corresponds to the 7th disability criteria in Chapter 3 when non-zero and age below 65

LPE Applied

Using the procedures described in the "Probability of Life" (L) and "Participation and Employment Rates" (PE) sections, we can now compute the worklife expectancy statistic using the LPE approach. Figure 59 presents a sample computation for a 60-year-old male with at least a baccalaureate degree and no work disability. Each row represents one year of potential employment. The columns of the exhibit are as follows:

- **Start Age** – Age at the beginning of this computation row
- **End Age** – Age at the end of this computation row
- **Base Age Survivors** – Number of survivors from Figure 62 for a 60-year-old male (constant for all rows)
- **At End Age Survivors** – Number of survivors from Figure 62 for a male at the age represented by the "End Age" column of the respective row
- **Prob. Of Life (L)** – Probability that a 60-year-old male will live to the age indicated in the "End Age" column, computed by dividing "At End Age Survivors" by "Base Age Survivors"
- **Prob. Of Emp. (PE)** – Extracted from Figure 63 for males with at least a baccalaureate degree and no work disability
- **Prob. Of Work (LPE)** – Probability a male with a baccalaureate degree and no work disability will be employed in the respective year, computed by multiplying "Prob. of Life (L)" by "Prob. Of Emp. (PE)."

The "Prob. Of Work (LPE)" column is summed to 7.7 years to derive the worklife expectancy for a 60-year-old male with at least a baccalaureate degree and no work disability.

Figure 59 Computation of Worklife Expectancy
60-Year-Old Male with a Baccalaureate Degree, No Work Disability

		Surivivors				
Start Age	End Age	Base Age	At End Age	Prob. Of Life (L)	Prob. Of Emp. (PE)	Prob. Of Work. (LPE)
60	61	84,232	83,115	0.987	0.807	0.797
61	62	84,232	81,913	0.972	0.807	0.784
62	63	84,232	80,619	0.957	0.807	0.772
63	64	84,232	79,226	0.941	0.807	0.759
64	65	84,232	77,730	0.923	0.807	0.745
65	66	84,232	76,135	0.904	0.370	0.334
66	67	84,232	74,437	0.884	0.370	0.327
67	68	84,232	72,628	0.862	0.370	0.319
68	69	84,232	70,695	0.839	0.370	0.310
69	70	84,232	68,632	0.815	0.370	0.302
70	71	84,232	66,448	0.789	0.370	0.292
71	72	84,232	64,157	0.762	0.370	0.282
72	73	84,232	61,759	0.733	0.370	0.271
73	74	84,232	59,256	0.703	0.370	0.260
74	75	84,232	56,651	0.673	0.370	0.249
75	76	84,232	53,954	0.641	0.164	0.105
76	77	84,232	51,180	0.608	0.164	0.100
77	78	84,232	48,333	0.574	0.164	0.094
78	79	84,232	45,410	0.539	0.164	0.088
79	80	84,232	42,406	0.503	0.164	0.082
80	81	84,232	39,312	0.467	0.164	0.077
81	82	84,232	36,136	0.429	0.164	0.070
82	83	84,232	32,905	0.391	0.164	0.064
83	84	84,232	29,672	0.352	0.164	0.058
84	85	84,232	26,487	0.314	0.164	0.051
85	86	84,232	23,377	0.278	0.110	0.031
86	87	84,232	20,382	0.242	0.110	0.027
87	88	84,232	17,542	0.208	0.110	0.023
88	89	84,232	14,889	0.177	0.110	0.019
89	90	84,232	12,453	0.148	0.110	0.016
				Total (Worklife Expectancy)		**7.708**

Changes from the Previous Version of *VALE 2000*

Users of the previous version of *VALE 2000* may notice a variance in the worklife expectancy statistics that is occasionally significant. Figure 60 presents a comparison of some of the estimates from this version to the corresponding estimates from the older version. These comparisons are made for the "All Levels of Education" category.

	Males			Females		
Age	Current	Older	% Chg.	Current	Older	% Chg.
Not Disabled						
25	35.6	33.9	5%	29.7	28.5	4%
50	14.1	12.8	10%	11.2	10.2	10%
Disabled, Not Sev.						
25	27.5	26.0	6%	21.5	19.8	9%
50	9.4	8.4	12%	7.2	6.2	16%

Figure 60 Comparison to Previous Version

Note that all example worklife expectancies show an increase. This is generally true of all the worklife expectancy statistics in this version, with the exception of younger workers with a severe work disability, who show an overall decrease. Using the worklife expectancies for a 25-year-old female, both with no work disability and with a not severe work disability, Figure 61 decomposes the change from the previous version into the following categories:

- **Update Life Tables** – The previous version used life tables published in 1996, the most current at that time. This edition employs more current data, published in 2002. In all cases, the impact on worklife expectancy is insignificant.

- **Adjust 93 CPS Weights** – The cross-tabulations published by the Census Bureau for 1993 were available in two versions. One version employed weights derived from the 1980 decennial census. These weights were utilized for all years since the mid-eighties. In 1993, the Census Bureau began use of the 1990 decennial census to estimate weights, which provided the second version.

  Our previous version employed the version based on the 1990 census, assuming the most current data are best. However, the weights published by the Census Bureau with the public use data files for the 1993 CPS contain the 1980 census weights. Since this edition of our tables relies upon extracting data from the public use data files, it inherits different weights for 1993. The impact is significant for some isolated cells for which we compute employment rates, but overall has an insignificant impact on worklife expectancy.

- **Census Error for Seniors** – Our previous version relied entirely upon cross-tabulations from the Census Bureau for probabilities of participation and employment. Census Table 2, in its current form, provides all of these probabilities. (See page 122 for more detail.) However, for the previous version, these probabilities for persons 65-74 years of age could be obtained only from Census Table 4 for years before 1996.

  It now appears that the Census Bureau's Table 4 was programmed incorrectly, resulting in significant understatement of the probabilities for this age group. The impact for our worklife expectancy statistics varies. The statistics for persons with a not severe work disability are more profoundly impacted than for those with no work disability. In addition, worklife expectancies for older workers are more materially impacted than those for younger workers, increased by more than 20% in many

instances. The Census Bureau has now corrected its Table 4, and has incorporated the computation for this age group in Table 2 for all years on its web site.

- **Extend Probabilities Through 89** – The previous version stopped computation of probabilities at the age of 74 (taking the person to his or her 75th birthday). This limit arose primarily from the fact that the Census cross-tabulations stopped at this age. Since the current edition relies upon extracts from the CPS public use data files, we can extend these probabilities through the age of 89 (to the person's 90th birthday). As one would expect, the impact of this extension is more significant for older workers.

- **Extend CPS Pooling to 10 Years** – Probabilities of participation and employment for the previous version were derived by pooling CPS statistics for six years (1992 – 1997). This edition extends this another four years, through 2001. All four added surveys took place during a prolonged strong economy for the United States. (Remember, the 2001 survey took place in March of 2001, before the economic downturn.) As a result, the probabilities and resulting worklife expectancies show material increases. This is most observable for those with a not severe work disability. This is to be expected. In an economy approaching full employment, employers are more likely to hire persons whom they otherwise might have excluded – including those with work disabilities. The impact of the 2002 CPS (not yet available at time of publication), taken during increased unemployment, should provide fodder for interesting analyses.

	Not Disabled		Disabled, Not Sev	
	Years	% Chg.	Years	% Chg.
Previous Version	28.5		19.8	
Update Life Tables	0.1	0.4%	0.0	0.0%
Adjust 93 CPS Weights	0.1	0.4%	-0.1	-0.5%
Census Error for Seniors	0.1	0.4%	0.5	2.5%
Extend Probabilities Through 89	0.3	1.1%	0.2	1.0%
Extend CPS Pooling for 10 Years	0.6	2.1%	1.1	5.6%
Current Version	**29.7**	**4.2%**	**21.5**	**8.6%**

Figure 61 Components in Change from Previous Version
25-Year-Old Female

Life Table

Figure 62 presents the life survivors data used to compute the probability of life component of LPE model for worklife expectancy. For a detailed description of the computation process, see page 121.

Figure 62 Life Survivors Data

Age	Male	Female	Age	Male	Female	Age	Male	Female
16	98,788	99,050	41	94,998	97,281	66	76,135	85,179
17	98,704	99,011	42	94,733	97,129	67	74,437	83,991
18	98,605	98,968	43	94,449	96,965	68	72,628	82,711
19	98,496	98,922	44	94,141	96,789	69	70,695	81,331
20	98,379	98,876	45	93,808	96,599	70	68,632	79,843
21	98,254	98,830	46	93,445	96,393	71	66,448	78,251
22	98,121	98,784	47	93,050	96,171	72	64,157	76,555
23	97,982	98,736	48	92,624	95,929	73	61,759	74,747
24	97,842	98,688	49	92,168	95,668	74	59,256	72,813
25	97,704	98,639	50	91,683	95,384	75	56,651	70,741
26	97,569	98,588	51	91,168	95,077	76	53,954	68,535
27	97,435	98,535	52	90,620	94,744	77	51,180	66,199
28	97,303	98,480	53	90,033	94,381	78	48,333	63,726
29	97,168	98,422	54	89,399	93,986	79	45,410	61,104
30	97,030	98,361	55	88,710	93,554	80	42,406	58,317
31	96,887	98,297	56	87,957	93,079	81	39,312	55,365
32	96,739	98,229	57	87,134	92,556	82	36,136	52,249
33	96,585	98,156	58	86,239	91,982	83	32,905	48,965
34	96,423	98,075	59	85,271	91,356	84	29,672	45,518
35	96,253	97,987	60	84,232	90,677	85	26,487	41,923
36	96,074	97,891	61	83,115	89,939	86	23,377	38,253
37	95,886	97,787	62	81,913	89,134	87	20,382	34,551
38	95,686	97,674	63	80,619	88,259	88	17,542	30,865
39	95,473	97,553	64	79,226	87,310	89	14,889	27,248
40	95,244	97,422	65	77,730	86,283	90	12,453	23,749

From: Anderson, Robert N. and Peter B. DeTurk. National Vital Statistics Reports; vol 50 no 6. *United States Life Tables, 1999*. Hyattsville, Maryland: National Center for Health Statistics, 2002. http://www.cdc.gov/nchs/data/nvsr/nvsr50/nvsr50_06.pdf

Rates of Participation and Employment

The joint probabilities of participation and employment (PE) used to compute the worklife expectancies published in this document are summarized in Figure 63. As documented in the Participation and Employment Rates section on page 122, these data are extracted from the Annual Demographic Survey (March supplement) of the Current Population Survey from the years 1992 – 2001.

Figure 63 PE Rate Summary

Disability Status	Age Groups 16 to 24	25 to 34	35 to 44	45 to 54	55 to 64	65 to 74	75 to 84	85 to 89
Males								
Less Than High School								
Not Disabled	0.417	0.818	0.851	0.872	0.739	0.198	0.072	0.025
Disabled, Not Sev.	0.393	0.616	0.668	0.636	0.396	0.082	0.038	0.014
Disabled, Severe	0.115	0.115	0.093	0.049	0.033	0.006	0.004	0.000
Disabled, All Levels	0.200	0.223	0.200	0.162	0.106	0.054	0.028	0.010
HS Degr. or Equiv.								
Not Disabled	0.767	0.899	0.917	0.925	0.754	0.238	0.099	0.035
Disabled, Not Sev.	0.615	0.743	0.753	0.747	0.475	0.131	0.052	0.022
Disabled, Severe	0.215	0.171	0.117	0.064	0.044	0.003	0.001	0.000
Disabled, All Levels	0.379	0.387	0.330	0.301	0.194	0.101	0.042	0.017
Some College								
Not Disabled	0.636	0.909	0.937	0.937	0.774	0.284	0.124	0.048
Disabled, Not Sev.	0.735	0.780	0.802	0.805	0.518	0.155	0.063	0.035
Disabled, Severe	0.244	0.203	0.115	0.071	0.058	0.009	0.003	0.000
Disabled, All Levels	0.532	0.517	0.472	0.435	0.276	0.127	0.053	0.029
College Degree								
Not Disabled	0.814	0.933	0.961	0.959	0.807	0.370	0.164	0.110
Disabled, Not Sev.	0.767	0.850	0.849	0.849	0.581	0.205	0.082	0.018
Disabled, Severe	0.221	0.232	0.155	0.138	0.092	0.011	0.009	0.000
Disabled, All Levels	0.626	0.566	0.582	0.597	0.365	0.174	0.073	0.015
All Levels of Education								
Not Disabled	0.585	0.900	0.928	0.934	0.771	0.267	0.106	0.043
Disabled, Not Sev.	0.551	0.746	0.775	0.774	0.491	0.127	0.052	0.019
Disabled, Severe	0.159	0.159	0.110	0.066	0.045	0.006	0.003	0.000
Disabled, All Levels	0.310	0.383	0.356	0.337	0.198	0.094	0.041	0.014
Females								
Less Than High School								
Not Disabled	0.352	0.472	0.583	0.632	0.469	0.121	0.031	0.008
Disabled, Not Sev.	0.280	0.293	0.406	0.402	0.241	0.062	0.022	0.003
Disabled, Severe	0.118	0.123	0.079	0.047	0.028	0.005	0.000	0.000
Disabled, All Levels	0.175	0.164	0.155	0.120	0.071	0.036	0.013	0.002
HS Degr. or Equiv.								
Not Disabled	0.656	0.708	0.779	0.780	0.576	0.155	0.045	0.011
Disabled, Not Sev.	0.488	0.563	0.586	0.598	0.359	0.072	0.029	0.009
Disabled, Severe	0.235	0.180	0.112	0.063	0.043	0.004	0.000	0.000
Disabled, All Levels	0.340	0.322	0.286	0.254	0.153	0.052	0.022	0.006
Some College								
Not Disabled	0.660	0.770	0.813	0.835	0.641	0.189	0.063	0.030
Disabled, Not Sev.	0.554	0.617	0.633	0.680	0.424	0.119	0.030	0.007
Disabled, Severe	0.259	0.230	0.150	0.105	0.058	0.007	0.006	0.000
Disabled, All Levels	0.427	0.437	0.384	0.358	0.197	0.091	0.025	0.005
College Degree								
Not Disabled	0.851	0.833	0.824	0.863	0.678	0.221	0.074	0.021
Disabled, Not Sev.	0.675	0.767	0.745	0.722	0.449	0.143	0.032	0.006
Disabled, Severe	0.275	0.308	0.204	0.143	0.105	0.003	0.000	0.000
Disabled, All Levels	0.526	0.587	0.526	0.460	0.265	0.113	0.026	0.005
All Levels of Education								
Not Disabled	0.558	0.736	0.782	0.801	0.592	0.161	0.046	0.014
Disabled, Not Sev.	0.435	0.568	0.602	0.609	0.352	0.082	0.027	0.006
Disabled, Severe	0.180	0.180	0.117	0.072	0.042	0.005	0.001	0.000
Disabled, All Levels	0.289	0.336	0.306	0.261	0.137	0.055	0.019	0.003

Chapter 19 Worklife Probability - Economic Calculations

To provide a common basis for the discussion that follows, review Figure 64 for an extract of the Worklife Probability report. For more information on the Worklife Probability report, see Chapter 14 and Chapter 18.

Summary:

	Pre-Injury		*Post-Injury*		*General*
Birth Date					8/8/82
Injury Date					3/15/98
Analysis Date					3/17/99
Cur. Wage Base	$24,184		$20,521		
Fringe Rate	23.0%		23.0%		
Education Level	12 years		12 years		
Gender Life/PE	F/F		F/F		
Continuum	Not Disabled		Disabled, Not Severely		
Growth/Discount	4.00%/5.04%		4.00%/5.04%		
Future Worklife	32.3		23.0		29%
Lifetime Earnings	$753,419	-	$458,850	=	$294,569

			Pre-Injury					*Post-Injury*				
Date	Earnings	Earnings	Prob. Age	Prob. Years	Prob. Life	Base PE	Adjusted Wrklife	Prob. Earnings	Prob. Earnings	Prob. Life	Base PE	Adjusted Wrklife
8/8/00	18.0	1.00	0.999	0.644	0.643	23,616	18,678	0.999	0.473	0.473	20,039	11,658
8/8/01	19.0	1.00	0.998	0.644	0.643	23,382	18,493	0.998	0.473	0.472	19,840	11,518
8/8/02	20.0	1.00	0.998	0.644	0.643	23,150	18,309	0.998	0.473	0.472	19,644	11,405
8/8/54	72.0	1.00	0.747	0.126	0.094	13,799	1,595	0.747	0.030	0.022	11,709	317
8/8/55	73.0	1.00	0.728	0.126	0.092	13,662	1,546	0.728	0.030	0.022	11,593	314
8/8/56	74.0	1.00	0.707	0.126	0.089	13,527	1,481	0.707	0.030	0.021	11,478	296
TOTAL		**57.0**					**753,419**					**458,850**
											Estimated Total Loss:	**294.569**

Figure 64 Worklife Probability Report Extract

Present Value

The more complex computations in *VALE 2000* surround the economic concepts of present value and future value. Although we show the most important steps in the derivation of the involved formulae, you may want to reference a textbook on finance for a more in-depth discussion.

The present value computation depends upon variables established on the Scenario Economics tab (see page 33):

Growth Rate - Entered as a decimal, this is the rate at which wages will grow on an annual basis.

Discount Rate - Also entered as a decimal, this reflects the annual investment rate assumed for the loss award. It is used to state future values in a current (present) value.

Future Losses

As we begin our discussion of *future losses*, it is important to distinguish this term from the concept of *future value*, which we discuss in a separate section of this chapter. Future losses are losses that occur in future periods. They may be stated either in today's dollars (present value) or in the dollars of the period in which they occur (future value). Thus, this section deals with computation of the present value of future losses.

Net Discount Rate

When computing the present value of future cash flows, we must first state them in terms of future value using the growth rate (g). We can compute the future value of an amount in one year by increasing it by g or multiplying it by $1+g$.

We reduce a future value to present value using the discount rate (d), or recognizing that we invest the result at a rate of d. That means that the invested present value is worth $1+d$ multiplied by the present value a year from now. Thus the present value of this one-year cash flow is the inverse or the cash flow divided by $1+d$.

This leaves us with the following formula for the present value of $1 one year from now:

$$PV = \frac{1+g}{1+d}$$

Equation 1 Present Value of $1 After One Year

This is, in effect, the multiplier used to state any value one year in the future in present value terms. Obviously, if the growth and discount rates are equal, the multiplier is 1, and the present value of any cash flow is equal to the beginning value. If we assume a growth rate of 4% and a discount rate of 5.04% (as is used in Figure 64), this would result in a present value of 0.9901. Instead of applying both the growth and discount rate for each year of the computation, *VALE 2000* uses a simplified approach by using a *net* discount rate (d_n). Since a discount rate is in the denominator of the equation, we need to take the inverse of Equation 1, and subtract the 1 added to both the numerator and denominator, or:

$$d_n = \frac{1+d}{1+g} - 1$$

Equation 2 Net Discount Rate

For our example with a 4% growth rate and 5.04% discount rate, this equation results in a net discount rate of 1.00%. Note that many people make the mistake of assuming the net discount rate is 1.04%, or the discount rate minus the growth rate. Although this is close, it is not technically correct.

Base Earnings

After calculating Probable Worklife, (see Chapter 14 and Chapter 18), Worklife Probability calculates the present value of the Base Earning figure for each individual period.

The program calculates present value as of the end of the period in relation to the report date. In our example, the end of the first period of time is August 8, 2001, and the report date is March 17, 1999. Therefore, the base earnings for this period are calculated for approximately 2.4 years. Equation 3 shows the formula that calculates Base Earnings (*be*), with *y* representing the number of years in the future for which the base earnings are being calculated, and *wb* representing the Current Wage Base (see Chapter 14).

$$be = \frac{wb}{(1 + d_n)^y}$$

Equation 3 Present Value of an Amount y Years in the Future

For the first pre-injury period in our example, *wb* is $24,184, d_n is 1.00% and *y* is approximately 2.39 (from March 17, 1999 to August 8, 2001). Applying these figures to Equation 3 results in a Base Earning figure (*be)* for the period of $23,616.

For those reports using a total offset, where the growth rate and discount rate are equal, the Base Earning figure will be equal to the Current Wage Base shown in the Summary section (in this example, $24,184).

Adjusted Earnings

Once the Base Earnings are calculated, Worklife Probability calculates the Adjusted Earnings, the figure that represents the client's probable earnings for the period given the variables chosen. The figure considers the Base Earnings calculated in the previous section in combination with fringe benefits and Probable Worklife for the period (see Chapter 14 and Chapter 18).

Equation 4 shows the formula that calculates Adjusted Earnings (*ae*), with *fb* representing the fringe benefits rate (stated as a decimal) and *wl* representing the Probable Worklife for the period.

$$ae = be * (1 + fb) * wl$$

Equation 4 Adjusted Earnings

In our example, the program takes the base earnings of $23,616, adds fringe benefits of 23% (by multiplying by 1.23), then multiplies by the Probable Worklife figure of .643. This results in the Adjusted Earnings figure of $18,678.

Past Losses

As the name implies, past losses are those losses that occurred before the date of the report. The program will discount past losses only if you checked the "Discount Past Losses" box on the Defaults form (see page 49) or the "Discount Pre-Injury Earnings" box on the Past Loss tab (see page 37). Since these losses extend backwards, the computation of their present value is the inverse of the present value of future losses. To document this computation, we use many of the techniques and annotations used for the previous sections. Therefore, an understanding of those sections is necessary before reading this one.

VALE 2000 measures present value computations of past loss from the date of injury to the report date.

To recognize that the period is going backward in time, we must reverse the impact of the net discount rate as shown in Equation 3 for the calculation of future loss. Equation 5 shows this calculation.

$$be = wb * (1 + d_n)^y$$

Equation 5 Present Value of an Amount y Years in the Past

Future Value

Most experts prefer to present damages in terms of present value. Indeed, this is the requirement for most courts. However, some states (i.e. New York and Michigan) require the use of future value terms. That is, damages need to be presented in terms of the dollar value of the year in which they will be incurred. *VALE 2000* performs computations to accommodate specifically those requirements.

As used in *VALE 2000*, future losses are any losses that occur after the report date. We can state future losses in terms of present value (the value at the report date) or future value (the value at the time the loss occurs).

To calculate future value, the user enters a nominal growth rate and a discount rate of zero (see page 33). The formulae described in the Present Value section of this chapter (beginning on page 131) are then used. Use of the formulae will result in a net discount rate (see Equation 2) that is negative; otherwise, the calculations are the same.

Past Losses

You might expect that computation of the future value of past losses is the inverse of future value for future losses. More simply, we should state past losses in terms of the dollar value in those past periods. However, keep in mind that the design of *VALE 2000* is to meet the future value requirement of a couple of isolated states. These states express past losses in present value terms. Thus, when *VALE 2000* computes future value, it merely echoes the value used for present value computations for past losses.

Chapter 20 Education Dollar Source

The source of the disabled and nondisabled education dollars is the same as the source for the participation and employment rates for worklife expectancy, the March Supplement to the Current Population Survey. The specific sources for producing the education dollars are:

U.S. Census Bureau, Current Population Reports, "Disability: Selected Characteristics of Persons 16 to 74, Table 3. Work Experience and Mean Earnings in 1995/1996/1997/ 1998/1999/2000--Work Disability Status of Civilians 16 to 74 Years Old by Sex: 1996/1997/1998/1999/2000/2001."
http://www.census.gov/hhes/www/disable/disabcps.html

U.S. Bureau of Labor Statistics. Consumer Price Index, All Urban Consumers, U.S. City Average. http://stats.bls.gov/data/home.htm (Source used for updating education dollars to report year dollars.)

While the first source provides data based on disability status and various educational levels, data are not reported for various college degree levels. Therefore, the following source is used to break out college levels:

U.S. Census Bureau, "Historical Income Tables - People, Table P-26. Educational Attainment--Full-Time, Year-Round Workers 25 Years Old and Over by Mean Earnings and Sex: 1991 to 2000." http://www.census.gov/hhes/income/histinc/p26.html

The remainder of this chapter provides the detail from these sources and describes how they are used.

Current Population Reports Data

The education dollars used by *VALE 2000* are based on a weighted average of six years of data from the Current Population Reports. To obtain the education dollars used in *VALE 2000*, the earnings from each year are brought up to 2002 dollars using the CPI Index. The 2002 dollars are then weighted by the number from the survey to derive an overall average. The raw data used in this calculation are as follows:

CPS RAW DATA
MEAN EARNINGS, YEAR-ROUND, FULL-TIME, AGE 25-64

	ALL EDUCATIONAL LEVELS				LESS THAN 12 YEARS				12 YEARS				13 TO 15 YEARS				16 YEARS OR MORE			
	With No Work Disability		With a Work Disability		With No Work Disability		With a Work Disability		With No Work Disability		With a Work Disability		With No Work Disability		With a Work Disability		With No Work Disability		With a Work Disability	
Year	#	Current Year Earnings	#	Current Year Earnings	#	Current Year Earnings	#	Current Year Earnings	#	Current Year Earnings	#	Current Year Earnings	#	Current Year Earnings	#	Current Year Earnings	#	Current Year Earnings	#	Current Year Earnings
	All Persons																			
1995	76660	$36,430	2377	$30,848	7213	$21,269	273	$17,496	24973	$28,153	793	$24,567	21160	$33,608	769	$28,498	23314	$52,546	541	$50,137
1996	78770	$38,239	2291	$30,754	7365	$22,502	285	$16,622	25794	$29,303	764	$26,014	21827	$35,379	756	$32,133	23784	$55,430	487	$44,334
1997	81010	$39,589	2219	$30,098	7473	$24,273	262	$19,294	26368	$29,865	718	$23,107	22140	$35,972	716	$29,180	25028	$57,606	523	$45,514
1998	83560	$40,903	2252	$31,854	7697	$22,978	214	$19,174	26664	$30,230	731	$25,240	23042	$37,361	731	$31,134	26156	$60,179	575	$45,891
1999	85167	$42,738	2431	$34,156	7489	$23,362	243	$19,761	26772	$31,607	887	$27,823	23884	$38,932	775	$35,362	27021	$62,502	526	$49,703
2000	86972	$45,262	2261	$33,968	7596	$25,644	291	$21,325	27138	$33,196	740	$28,232	24572	$40,536	716	$34,564	27666	$66,681	513	$48,575
	Male																			
1995	45379	$42,512	1500	$35,579	4878	$23,573	161	$19,937	14422	$32,609	474	$29,184	11937	$39,123	477	$30,835	14142	$62,004	387	$55,777
1996	46694	$44,307	1415	$35,957	5073	$24,759	186	$19,008	14938	$34,196	466	$31,055	12218	$41,148	464	$37,828	14465	$64,274	299	$51,279
1997	47891	$45,892	1372	$33,703	5112	$27,246	162	$22,097	15401	$34,430	437	$25,546	12375	$41,513	456	$31,680	15003	$67,623	317	$53,832
1998	49367	$47,091	1441	$35,583	5181	$25,659	119	$23,985	15623	$34,201	428	$26,188	12817	$42,883	511	$34,896	15745	$70,359	382	$50,619
1999	49788	$50,054	1466	$38,258	4937	$25,689	130	$22,939	15591	$36,757	532	$32,612	13104	$45,652	486	$39,609	16156	$73,903	318	$51,898
2000	50804	$53,234	1367	$37,656	4945	$29,180	169	$25,447	15858	$38,432	462	$30,604	13527	$48,040	434	$38,898	16475	$78,967	302	$53,457
	Female																			
1995	31281	$27,606	877	$22,759	2335	$16,456	112	$13,980	10550	$22,063	319	$17,706	9223	$26,471	292	$24,684	9171	$37,961	154	$35,963
1996	32076	$29,406	876	$22,356	2292	$17,508	99	$12,121	10856	$22,570	298	$18,122	9609	$28,043	292	$23,086	9319	$41,701	188	$33,303
1997	33119	$30,474	847	$24,258	2361	$17,837	100	$14,733	10967	$23,454	281	$19,317	9765	$28,949	260	$26,529	10025	$42,615	206	$32,746
1998	34193	$31,970	811	$25,235	2516	$17,454	95	$13,173	11041	$24,611	303	$23,903	10225	$30,439	220	$22,385	10411	$44,785	193	$36,529
1999	35378	$32,442	965	$27,926	2552	$18,861	113	$16,101	11181	$24,425	355	$20,656	10780	$30,762	289	$28,213	10865	$45,549	208	$46,351
2000	36168	$34,064	894	$28,329	2652	$19,051	122	$15,618	11280	$25,835	279	$24,306	11044	$31,346	282	$27,897	11192	$48,596	211	$41,578

Historical Income Tables

While the data from the Current Population Reports provide information on earnings by disability status and by educational level, they do not report data that breaks out varying college degree levels. To do this, information from the Historical Income Tables is used.

Like the previous calculation, these data are weighted by the earnings and number contained in the table. Once the overall average for each group has been calculated, a differential from the "Bachelor's or More" group to each individual group is determined. These differentials are applied to the average from the Current Population Reports to derive education dollars for each college degree level that are disability specific.

Historical Income Tables Raw Data

	Male		Female		Male		Female	
	Number	00 $	Number	00 $	Number	00 $	Number	00 $
	Bachelor's or More				Professional Degree			
2000	17385	78758	11580	48411	1274	120588	509	72430
1999	17138	76191	11240	46985	1267	135102	470	74613
1998	16733	73590	10713	47102	1264	123992	468	82108
1997	15864	71846	10425	45260	1321	128749	488	79261
1996	15339	69796	9634	46013	1277	123388	413	99161
1995	15054	69298	9404	42582	1208	125369	421	67420
	Bachelor's Degree				Doctorate Degree			
2000	11393	70332	7895	43831	1038	96451	353	61474
1999	11138	65624	7606	42487	1008	111973	346	71406
1998	11058	64724	7276	42835	998	97348	329	69103
1997	10349	60595	7172	40678	966	99751	318	64699
1996	9898	58049	6686	40779	893	94488	322	67960
1995	9597	59453	6432	38596	853	87373	283	62261
	Master's Degree							
2000	3680	85373	2823	55252				
1999	3725	78064	2818	51518				
1998	3414	76702	2639	49911				
1997	3228	76282	2447	49381				
1996	3272	77692	2213	48719				
1995	3395	72624	2268	46822				

Chapter 21 CPI Index Source and Calculations

The CPI Index is provided to assist in bringing Education and VALE dollars up to report year dollars when desired. The source of the CPI data is

US Department of Labor, Bureau of Labor Statistics. *Consumer Price Index, All Urban Consumers (CPI-U), US City Average, All Items.*

Year	CPI-U	Year	CPI-U	Year	CPI-U
1970	38.8	1981	90.9	1992	140.3
1971	40.5	1982	96.5	1993	144.5
1972	41.8	1983	99.6	1994	148.2
1973	44.4	1984	103.9	1995	152.4
1974	49.3	1985	107.6	1996	156.9
1975	53.8	1986	109.6	1997	160.5
1976	56.9	1987	113.6	1998	163.0
1977	60.6	1988	118.3	1999	166.6
1978	65.2	1989	124.0	2000	172.2
1979	72.6	1990	130.7	2001	177.1
1980	82.4	1991	136.2	2002	179.9 [6]

Quite often, the VALE or education dollar source for a particular wage predates an analysis by one or more years. When this happens, you may increase the wage to reflect the inflation that has occurred since it was established. *VALE 2000* provides a mechanism to perform this computation automatically. This provides the benefit of being able to use a wage from one year without needing to adjust the wage manually.

The CPI Adjustment check box on the Case Data screen (see page 23) controls whether or not a wage is inflated. If this box is checked, *VALE 2000* computes inflation adjustments.

Page 40 documents use of the CPI Index screen to load the Consumer Price Indices for any year. These indices are the basis for all inflation adjustments made by the system. Each inflation computation uses exactly two indices:

Base Year - The index for the year in which the wage was established, or CPI_b.

[6] The 2002 CPI Index is estimated based on the monthly index for June 2002.

Report Year - The index for the year in which the report is generated (as determined by the Report Date field in the Case Data screen), or CPI_r.

The inflation multiplier is computed by dividing the report year index by the base year index, or:

$$M = \frac{CPI_r}{CPI_b}$$

Equation 6 Inflation Multiplier

For example, assume that VALE calculated a mean dollar of $23,502 in 1996 dollars and that the 1996 CPI was 156.9. Also assume that the report is being written in 1998, with a CPI of 163.0. The resulting multiplier is 163.0 ÷ 156.9 or 1.039. (This can be interpreted as showing 3.9% inflation from 1996 to 1998.) The inflated wage would be $23,502 x 1.039, or $24,419. The VALE portion of the program will print $24,419 as the 1998 earning capacity, and Worklife Probability will use this dollar in its calculations of lifetime expected earnings.

This process also works to *deflate* a wage. This happens when the base year index is greater than the report year index. If the report and base years were reversed in the previous example, the multiplier would be 156.9 ÷ 163.0, or 0.963. The $23,502 base rate would adjust to $22,632. Obviously, if the base year and report year are the same, the multiplier is 1.000 (no inflation).

Part V Help

Chapter 22 Troubleshooting

If you are having a problem with *VALE 2000*, this chapter could provide a solution. This chapter explores solutions to actual problems or errors with the system. Although we expect such problems to be rare, this discussion should smooth the problem-solving phase.

First, we explore some potential problems, their symptoms, probable causes, and possible solutions. Later, in the Solutions section, we provide more detail on the solutions introduced in the Problems section. You should use the Problems section to point you to the potential solutions, then read the Solutions section for the appropriate detail. Note that the possible solutions listed usually do not include calling Technical Support. This does not mean that you do not have that option. The reason we do not list Technical Support for a particular problem is that the suggested solutions from Technical Support would likely be the same as detailed below.

Problems

The problems listed below are in order of decreasing probability of occurrence. Each problem may list multiple possible solutions. We list these solutions in the recommended order of application.

Slow Response

Symptoms	Response time moving between forms and opening reports is slow
Probable Cause	Insufficient resources or fragmented data files
Possible Solutions	Close Other Applications - reduce the drain on your computer's resources from other requirements
	Compact and Repair - improve the efficiency of *VALE 2000's* data storage

Defragment Hard Drive - improve the efficiency of your computer's data storage

Reboot Computer - free memory not released by closed applications

Confirm Resources - verify that you have sufficient "horsepower" to run *VALE 2000*

Corrupt Files

Symptoms Receive error message stating that data are corrupt or unable to read data

Probable Cause PC was turned off or "crashed" while *VALE 2000* was running

Possible Solutions Compact and Repair - repair corrupt data

Restore from Backup - revert to an uncorrupt backup version

Reboot Computer - free memory not released by closed applications

Reinstall Software - start from scratch

Missing Records

Symptoms Data entered previously do not show up

Probable Cause Corrupt files or data filters turned on

Possible Solutions Clear Filters - clear data selection filters

Compact and Repair - repair corrupt data

Restore from Backup - revert to an uncorrupt backup version

Unable to Find Data

Symptoms Receive error message stating that *VALE 2000* could not find the "BASETABL.MDB" and/or the "DYNATABL.MDB" files

Probable Cause You have moved the data files for the system to another location or the data have become corrupt

Possible Solutions Refresh Path - set pointers to the proper data file

Compact and Repair - repair corrupt data

Restore from Backup - revert to an uncorrupt backup version

Reinstall Software - start from scratch

Unable to Start System

Symptoms	System will not start or open
Probable Cause	Insufficient resources or damaged files
Possible Solutions	Close Other Applications - reduce the drain on your computer's resources from other requirements
	Compact and Repair - repair corrupt files
	Reboot Computer - free memory not released by closed applications.
	Confirm Resources - verify that you have sufficient "horsepower" to run *VALE 2000*

Critical System Error

Symptoms	Receive an error message from *VALE 2000* saying to contact Technical Support
Probable Cause	Unknown
Possible Solutions	Contact Technical Support

Windows Complains of Insufficient Memory

Symptoms	Receive an error message complaining of insufficient memory
Probable Cause	Insufficient resources to operate all open programs
Possible Solutions	Check Free Disk Space - verify that you have sufficient free disk space to run the programs

Solutions

The solutions listed below are in alphabetic order for ease of reference. You should first identify the problem in the preceding section, and then trace the suggested solutions to this section.

Check Free Disk Space

Ensure that you always have 2.5 to 3 times as much free disk space as you have RAM (random access memory) installed in your computer. For example: a 16 megabyte computer would require at least 40 megabytes of disk space for its critically important

swap file, possibly as much as 48 megabytes. This would be in addition to any temporary files that the various applications you have open at the time may create.

A short-term solution may be to free up some disk space by deleting temporary files (usually stored in C:\Windows\Temp) that are at least 6 months old, then "emptying" the Recycle Bin.

Clear Filters

If you cannot find a case you previously entered in the Case Select screen, you may have filters turned on that actually exclude it from the current case list. Make sure that the filters you enter are not so restrictive as to exclude your target case. For more information, see page 19.

Close Other Applications

One of the advantages of modern 32-bit software is the ability to run multiple applications simultaneously. However, many users forget that their computers have resource limits that may constrain this ability. If your system is running slowly, you should close all applications and windows that are not necessary to your current tasks. (This includes any extra forms or report views you may have open within *VALE 2000*.) If other applications must be open, minimize them to reduce their resource requirements. Also remember that although it may look great, high-resolution wallpaper is a significant drain on your computer's resources.

Compact and Repair

As discussed on page 51**,** you should periodically compact and repair your *VALE 2000* data to assure operating efficiency. The "Compact and Repair" option available from the start menu performs two important tasks:

1. Through frequent use of *VALE 2000*, your data records can become stored in noncontiguous space on your computer's hard drive. This makes the system become increasingly inefficient and slow. "Compacting" the data corrects this inefficiency.

2. If your computer "crashes" or shuts down abnormally while *VALE 2000* is open, some pointers used in the system's data structure may become corrupt. "Repairing" the data corrects these errors.

Confirm Resources

If you have problems with memory or processing speed, confirm that your computer meets the minimum requirements stated in Chapter 2. If you just meet the basic requirements, minimize other drains on your system resources as described in Close Other Applications above.

Contact Technical Support

Although not always listed, this is an optional solution for all of the problems listed above. See Chapter 23 for more information on support options.

Defragment Hard Drive

As you use your computer, data from your most frequently updated applications become "fragmented." That means that the operating system may store a single data file in several noncontiguous areas of your hard drive. This makes subsequent accesses less efficient and more time consuming. Several software utilities (one of which, "Disk Defragmenter," comes with Windows™ 9x) exist to remedy this inefficiency. You should run such a utility on a regular basis: monthly or possibly weekly for heavy users.

Reboot Computer

All applications in a Windows™ 9x environment should free all memory used as they close. However, due to software bugs or other complications, this does not always happen. If you experience unexpected memory or resource shortages, chances are that part of your computer's memory is still being used by an application no longer open. The only way to remedy this is to reboot your computer. (Choose "Shut Down" from the start menu, and then select the "Restart the Computer" option.)

Reinstall Software

A drastic last step, but we have to talk about it. Such a step should probably come only from a general failure of your computer.

➢ **To reinstall *VALE 2000*:**

1. Uninstall the old version as described on page 13. If the program tells you that it cannot find something in Staging, click "OK." The uninstall process should leave your data files intact. Then reinstall the software as described in Chapter 2.
2. If step 1 is unsuccessful, contact Technical Support.

Refresh Path

If you moved your data file ("BASETABL.MDB" and/or "DYNATABL.MDB") to keep it separate from the program files, you need to tell the system where to find the data. See page 53 for more information.

Restore from Backup

Proper safeguard standards dictate regular backup of your computer's data. In some cases, you may need to restore saved *VALE 2000* files to solve a system problem. If

simply trying to recover a lost record or case, the only file you need to restore is "BASETABL.MDB" and/or the "DYNATABL.MDB." However, if you are trying to recover from a general system failure, you should restore the entire directory containing *VALE 2000*.

Chapter 23 Support Services

Vocational Econometrics, Inc. provides technical support to assist customers in the implementation of *VALE 2000*. Included with the purchase of each license is free technical support for 30 days from the date of purchase. Before you call, please make sure you have tried to resolve the problem through the following steps:

- Compact and repair your database. If you have made several updates and computations since the last time you performed this step, your application may become unstable. For more information see Chapter 10.

- Review the "Troubleshooting" (Chapter 22) chapter to see if it addresses your questions.

Free Support

Each license comes with free technical support for 30 days from the date of purchase. This encompasses any problems associated with the installation or operation of the *VALE 2000* software. Before calling, please have the information described below in "Before You Call" available.

Not included as Free Support are questions that are of a consulting nature. That is, assistance on topics such as analyzing a case or testimony preparation falls under Fee Support.

Fee Support

Technical support past the first 30 days and case consulting are billed by the hour. Billings are to credit cards in 30-minute increments, with a minimum of 30 minutes. Hourly rates are subject to change without notice. Table 1 presents the rates in effect at the time of the publication of this manual.

Type	Description	Rate
Technical	Installation and operation of software	$100 / Hour
Consulting	Analysis and application of data for use in a case	$150 / Hour

Table 1 Support Fees

Before You Call

To ensure efficient service, please have the information in Table 2 available. The telephone number for technical support is (502) 589-0995, available between 8:30 and 5:00 Eastern Standard Time.

Type of Support	Information	Comments
All	Serial number, Licensee name and company	Available by clicking the Help menu and choosing "About *VALE 2000*."
Technical	Computer processor type (e.g. Pentium), Windows version, total RAM, and total hard drive disk size and space available.	Available by clicking the Help menu and choosing "About *VALE 2000*." Then, click the "System Information" button.
Technical	Path used to install the software.	This is needed only if you did not use the setup routine's default path when you installed the system.
Fee	Credit card type, number, expiration date, and name shown on card.	Visa or MasterCard only

Table 2 Before You Call Information

Premium Support

An optional Premium Support package is available for an annual fee (currently $95, but subject to change without notice). This package includes several benefits:

- Guaranteed response to telephone queries within one business day. (Standard support guarantees two business days.)
- Fee support discounts of 10%
- Automatic notification (via e-mail) of any service upgrades (technical "fixes" to the current *VALE 2000* version)
- Version upgrade discounts of 10%
- Automatic distribution (via e-mail) of new national functional wages
- Automatic distribution (via e-mail) of new annual Consumer Price Index data
- Automatic distribution (via e-mail) of any documentation updates

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