

# ***ESPlanner<sup>TM</sup>***

*-- A Revolution in Financial Planning*

## ***Tutorial***

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U.S. Patent No. 6,611,807.

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## Introduction

Thank you for purchasing *ESPlanner*, a unique patented financial planning software package based on the life-cycle model of saving. The life-cycle model, developed by Nobel Laureate Franco Modigliani, is the standard framework used by economists to understand consumption, saving, and insurance behavior. The model is grounded in the common-sense notion that households seek to achieve and maintain the highest possible living standard through time. Economists refer to the desire to avoid abrupt changes over time in one's living standard as *consumption smoothing*.

*ESPlanner* recommends annual levels of consumption, saving, and life insurance holdings to achieve consumption smoothing. Specifically, given its inputs, the program's recommendations maintain your family's living standard at the highest affordable level and guarantee potential survivors that same living standard. Solving the problem of both maximizing and smoothing your household's living standard over time and across survival contingencies is not easy. *ESPlanner* uses a patented dynamic programming method to solve this problem. Dynamic programming is an advanced mathematical technique that has not been used in previous commercial financial planning applications.

In providing its basic recommendations for how much your family should consume, save, and insure each year, *ESPlanner* considers how much your regular and retirement account assets will yield, each year. *ESPlannerPlus* incorporates all the features of *ESPlanner*, but it also recognizes that future rates of return are uncertain. Its Monte Carlo simulations show the annual variability of your family's living standard and other economic variable arising from the household's asset allocation decisions.

Our approach to financial planning differs markedly from conventional financial planning. Conventional planning makes you plan for yourself by making you specify retirement spending targets. This is very difficult and can be dangerous. If you set your target too low, you'll be advised to under save and underinsure and your family's living standard will drop, if not plunge, at retirement. If you set your target too high, you'll be advised to over save and over insure and your family's living standard will jump up, if not soar, at retirement. In either case, there's an abrupt change in living standard – precisely the opposite of consumption smoothing.

Rather than asking you to find future spending targets that are consistent with lifetime consumption smoothing, *ESPlanner* finds the right targets automatically by determining your household's highest sustainable living standard along with the savings and amount of life insurance needed to preserve that living standard through time. These calculations are made taking into account the taxes you will pay in each future year and the borrowing limitations you face.

*ESPlanner* recommends annual levels of consumption, saving, and life insurance holdings. Consumption refers here to all living expenses apart from housing expenses, special expenditures, contributions to a reserve fund, taxes, contributions to retirement accounts, and life insurance premium payments, all of which are treated as "off-the-top" expenditures that have to be made when they come due. Annual consumption

recommendations are adjusted for the household composition in the year in question; i.e., when children are young and still in the household, the program recommends higher consumption expenditures. In so doing, the program takes into account the fact that two can live more cheaply than one and that children may be less or more expensive to support than adults.

Another key feature of *ESPlanner* is *contingent planning*. Contingent planning permits you to plan in detail for the possible early deaths of your family's earners. Specifically, it allows you to specify how your family's earnings, special expenditures, special receipts, retirement plans, dates of Social Security retirement benefit collection, and contributions to retirement accounts would differ were a spouse/partner to die. *ESPlanner* provides easy ways of inputting these data when one's contingent and regular amounts are identical. *ESPlanner* defaults to the household's regular amounts for these expenditures, but permits you to override the defaults as necessary.

You can activate contingent planning using the *Family Information* screen. *ESPlannerPlus*' Monte-Carlo simulations allow you to construct ten different portfolios (combinations of financial assets), which your family might want to hold in the future. You can then specify for each future year which of these ten portfolios will apply to your family members' regular assets and retirement account assets. When you run the program's Monte-Carlo reports, it generates a variety of tables and charts that display the variability of your family's living standard, income, and assets over time given the portfolios your family intends to hold now and in the future. If you purchased *ESPlannerPlus*, you can also activate the Monte Carlo simulations on the *Family Information* screen.

**Unlike the other reports, which run in a matter of seconds on a fast machine, the Monte Carlo calculations involve very extensive and time-consuming calculations. Indeed, for young families, generating the Monte Carlo reports can take several minutes even on today's most advanced desktops. If your computer is not very fast and has limited memory, you will need to be patient.** On the other hand, if you just want to run the main, detailed, or survivor reports, you can deactivate the Monte Carlo simulations on the Family Information Screen.

A hallmark of *ESPlanner* is the precision with which it calculates annual federal and state income taxes, FICA taxes, and social security benefits. Even small mistakes in determining a household's future taxes and benefits can lead to major mistakes in current saving and insurance recommendations because they are generally repeated for a large number of future years, making their aggregate effect sizable.

In *ESPlanner* all taxes and Social Security benefits are calculated separately for each year the household head and spouse/partner could both be alive and for each year that the household head and spouse/partner could be widowed. In the latter case, *ESPlanner* calculates taxes and benefits conditional on the age of death of the decedent. In the case of *partners* – unmarried couples – the program calculates taxes treating each partner as a single tax payer.

The amount of taxes a household pays over time depends on how much it earns and how much asset income it receives. The amount of asset income depends, in turn, on the amount of assets, which depends on decisions about spending and saving. Hence, one can't determine how much in taxes a household will pay over time without knowing how much it will spend over time. But one can't determine a household's spending over time without knowing its taxes over time.

If taxes depend on spending, but spending depends on taxes, how can we resolve this chicken and egg problem, which economists call a *simultaneity problem*? The answer is by developing iterative algorithms that simultaneously determine how much is spent and how much taxes are paid over the household's entire life cycle, include the life cycles of survivors conditional, in the case of couples, on all the possible different dates of death of spouses and partners.

As part of these algorithms, the program's federal income tax calculator decides if the household should itemize deductions, whether it is eligible for the earned-income and child-tax credits, and the extent to which its Social Security benefits are subject to taxation. It also includes the Alternative Minimum Tax. And it takes into account the most recent changes in federal and state income tax provisions. The state income tax calculator incorporates the progressive rate structure, deductions, and exemptions in each state's income tax law.

As indicated, *ESPlanner* lets households declare themselves as partnered, in which case the software calculates federal and state income taxes for each partner separately using singles or head of household tax tables and provisions. This is a very important feature given the large number of unmarried couples in American society.

The program's Social Security benefit calculator determines retirement, spousal, survivor, divorcee, child, and mother and father benefits subject to the remaining earnings test, benefit-re-computation provisions, delayed retirement credits, early retirement reduction factors, increases in the age of normal retirement scheduled by law, maximum family benefits, etc. Since the amounts of survivor and child, mother, and father benefits depend on the precise earnings history of the deceased spouse, *ESPlanner* calculates these benefits separately conditional on each and every possible date of death of each spouse. *ESPlanner* also applies special formulae for calculating the benefits of government employees who receive pensions based on non-Social Security covered employment.

Given the complex nature of the calculations needed to achieve a consumption-smoothing financial plan, a natural question to ask is whether one can really tell if *ESPlanner* is making the correct calculations. The answer is yes. First, one can immediately verify that the program's recommendations never put the household in debt or in more debt than the household is willing to incur. Second, one can easily check that the household's living standard is being smoothed. Third, one can readily verify that the program's recommended life insurance holdings are, to the dollar, what is needed to preserve survivors' living standards. And fourth, one can see from the software's reports that all the inputs, such as housing

expenses, bequests, contributions to reserve funds, and special expenditures, are being included in the program.

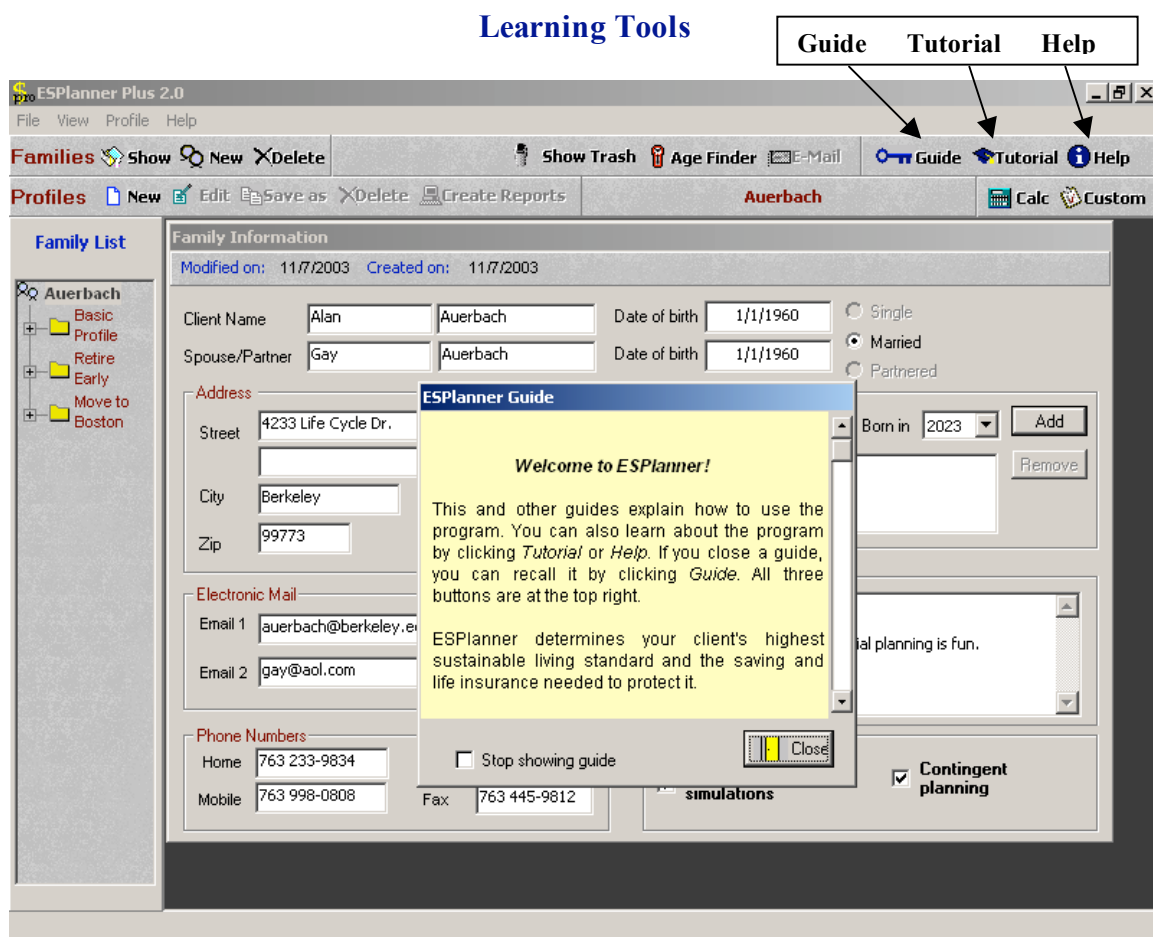
The only thing users can't immediately verify is the program's calculation of taxes and Social Security benefits. These are the only variables shown in the reports not directly inputted by users. But, as just indicated, taxes and Social Security benefits are calculated with great care.

*ESPlanner* was developed by Professor [Laurence J. Kotlikoff](#), Chairman of the Department of Economics at Boston University and Dr. Jagadeesh Gokhale, a Senior Fellow at the Cato Institution, who served for many years as Senior Academic Advisor to the Federal Reserve Bank of Cleveland. The two economists are leading authorities on the economics of consumption, saving, insurance, portfolio choice, and fiscal policy.

The program took a decade to develop and is used routinely for research, results of which are posted at [www.esplanner.com](http://www.esplanner.com). Much of this research was supported by Boston University, the National Institute of Aging (an institute of the National Institutes of Health), the Smith-Richardson Foundation, and TIAA-CREF, for which we are most grateful. The National Institute of Aging also provided critical and early support for research on this product via a STTR grant.

## Learning Tools

*ESPlanner* provides three tools to help you learn the program. The first is this document, which you can access at any time by clicking the *Tutorial* button at the top right corner of the interface. The second tool is the *Guide*. This refers to small instructional screens that tell you how to set up a new family, establish input files for your family, and enter data for each input file. There is a separate guide for each input screen. We **strongly** recommend reading the guides in their entirety. If you have turned the *Guide* off, you can reactivate it at any time by clicking on the *Guide* button, which is adjacent to the *Tutorial* button. There is also a hyper-linked help file that will launch in your browser, which includes a glossary of terms. The button for *Help* is also located next to the *Tutorial* button. Another way to learn about our software is to read the research papers we've posted at [www.esplanner.com](http://www.esplanner.com).



**Customer Support**

Economic Security Planning, Inc. prides itself on providing fast customer support. If you have questions or technical problems, please email us at [info@esplanner.com](mailto:info@esplanner.com). Please include your phone number in case we want to call you.

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## System Requirements

ESPlanner runs on Windows. It can also run on Linux using VMWare or the Macintosh using Virtual PC. Other PC emulators on either Linux or the Macintosh may work but have not been tested. We do not provide emulator installation support for either Linux or the Macintosh.

*ESPlanner* reports are displayed using Microsoft *Word* and Microsoft *Excel* (2000, XP, or 2003 only). Having both programs is a requirement for running the program. *ESPlanner* may be installed on any version of Windows supporting the required versions of Microsoft *Word* and Microsoft *Excel*.

Your computer will need a minimum clock speed of 500 megahertz and a minimum of 256 megabytes of random access memory. If your computer meets only these minimum requirements, the program may run rather slowly (from 6 to 10 minutes per execution for input files involving married couples and 3 to 6 minutes per execution for input files involving single individuals). If your computer's clock speed is much faster and you have much more RAM, the program will execute rapidly – usually within 1 minute for input files involving married couples and within 30 seconds for input files involving single individuals.

These estimates pertain to running the main, survivor, and detailed reports. The Monte Carlo simulations can take several minutes even on the world's fastest machines. Our Monte Carlo simulations are done with considerable care. When the Monte Carlo option is activated and the Monte Carlo reports are requested, the program runs a separate dynamic program, which takes into account the variability of rates of return on regular and retirement account assets. As part of the dynamic program, *ESPlanner* makes separate tax calculations for each possible configuration of rates of return that your family could experience in each future year. Stated differently, the Monte Carlo results take full account of the tax implications of the household's receiving the time path of returns that is drawn in each simulation.

## Overview of the Software

*ESPlanner* has a simple interface. There is a *Families Tool Bar* that allows you to enter a new family, delete old families, and list entered families. And there is a *Profiles Tool Bar* that allows you to start new files for your families, edit existing files, save existing files under different names, delete existing files, and compute (process) existing files.

Other buttons across from the Families Tool Bar permit you to activate the *Guide*, the *Tutorial*, and *Help*. You can also see and retrieve deleted families and files by clicking *Show Trash*, determine the age of your families in a particular year by clicking *Age Finder*, and email your families by clicking *E-Mail*. Finally, there are *Calc* and *Custom* buttons to activate the Windows calculator and to customize the program by providing your own professional information. (In a future release of the program, we will incorporate the information you enter under Custom on an automated summary statement.)

Before beginning to use the software, you will need to collect your financial data. The following list itemizes the principal data required for a through planning session using *ESPlanner*:

- 1) Your pay stub (and that of your spouse/partner)
- 2) The age that your (and your spouse/partner) plan to retire
- 3) Your projected employee and self-employment labor earnings through retirement
- 4) Projected special expenses for college, weddings, emergency funds, travel, nursing home care, loan repayments, etc.
- 5) Projected special receipts from bonuses, inheritances, sale of business, etc.
- 6) The current market value of your (and your spouse/partner's) regular assets.
- 7) The current market values of your (and your spouse/partner's) 401(k), 403(b), IRA, Roth IRA, Keogh, SRA, and other retirement accounts. Separate balances are needed for each individual and for employer and employee accounts.
- 8) The current market value of your assets that are held in a reserve/emergency fund. Projection of how you'd like that fund to grow or decline through time.
- 9) Monthly rental expenses for your principal and vacation homes, if any.
- 10) For each principal and vacation home owned by you (and your spouse/partner) clients, its estimated market value, annual property taxes, annual homeowners insurance, original purchase price (basis), annual condo fees and maintenance expenses, if any.
- 11) For each mortgage/loan for each home the outstanding mortgage balance, the monthly mortgage payment (excluding escrow payments for property taxes and homeowners insurance), and years left to pay.
- 12) Projected funeral expenses and desired special bequests
- 13) Face and cash values of all individual, employer-provided, and group life insurance policies.

- 14) The amount you (and your spouse/partner) expect to add or subtract this year from regular assets. (ESPlanner uses this information in helping determine what your clients are actually saving.)
- 15) Projected annual contributions to retirement accounts by you (and your spouse/partner)
- 16) For each defined benefit pension and annuity you (and your spouse/partner) will receive, the year it will start, the amounts of lump-sum and annual benefits, the degree of inflation indexation or growth rate, and the degree of survivor benefit protection.
- 17) Your (and your spouse/partner's) Social Security earnings records. These records can be ordered at [www.ssa.gov](http://www.ssa.gov) or by calling the Social Security Administration at 1-800-772-1213 and then pressing 1 followed 2 followed by 1.
- 18) For the Monte Carlo portion of ESPlanner, the distribution of your (and your spouse/partner's) portfolios of regular and retirement account assets.

When you select a family from the Family List, the family's basic demographic and contact information is displayed.

## Tool Bars

The screenshot displays the ESPlanner Plus 2.0 software interface. On the left, three callout boxes with arrows point to specific tool bars:

- Families Tool Bar:** Points to the 'Families' menu and the 'Show', 'New', and 'Delete' buttons in the top toolbar.
- Profiles Tool Bar:** Points to the 'Profiles' menu and the 'New', 'Edit', 'Save as', 'Delete', and 'Create Reports' buttons in the top toolbar.
- Family List with Files:** Points to the 'Family List' sidebar on the left, which contains a tree view of family profiles including 'Auerbach' and 'Uncle Joe'.

The main window shows the 'Family Information' form for the 'Auerbach' family. The form includes fields for Client Name, Spouse/Partner, Date of birth, Address, Electronic Mail, Phone Numbers, and Children under 19. The 'Auerbach' family is selected, showing details for Alan and Gay Auerbach, both born 1/1/1960, married, residing at 4233 Life Cycle Dr., Berkeley, CA 94703. The 'Electronic Mail' section shows email addresses auerbach@berkeley.edu and gay@aol.com. The 'Phone Numbers' section shows Home (763 233-9834), Work (763 245-9812), Mobile (763 998-0808), and Fax (763 445-9812). The 'Children under 19' section shows two children: Andy, born in 1993, and Ethan, born in 2005. The 'Notes' section contains the text 'Reminder: financial planning is fun.' The 'Activate' section shows checkboxes for 'Monte Carlo simulations' and 'Contingent planning', both of which are checked.

When you click on *Inputs* under the name of a file (all of which are listed below the family's name in the Family List) or when you click on the file name and click *Edit* on the Profiles Tool Bar, the program will display a list of input folders. The idea is to click on an input folder, enter data for each screen in that folder, and then proceed to the next folder. In the figure below, the earnings folder has been selected. The wage earnings screen is shown, but the self-employment earnings screen can be accessed by clicking on that tab.

## Entering Inputs

**Input Folders**

- Earnings
- Special
- Estate
- Assets & Saving
- Retirement Accounts
- Pensions & Annuities
- Primary Home
- Vacation Home
- Social Security
- Assumptions
- Monte Carlo
- Contingent Plans

**Earnings**

1. Set Retirement Date

☒ Alan  Age 65

☐ Gay  Age 65

**Input Screen Tabs**

[Employee Wages](#) | [Self-Employment Earnings](#)

2. Select a year on the grid

3. Enter earnings for 2003 in today's dollars

4. Repeat step 2 or grow earnings in real terms from selected year at rate

| Year | Age | Today's Dollars | Dollars |
|------|-----|-----------------|---------|
| 2003 | 43  | 60,000          | 60,000  |
| 2004 | 44  | 60,000          | 61,800  |
| 2005 | 45  | 60,000          | 63,654  |
| 2006 | 46  | 60,000          | 65,564  |
| 2007 | 47  | 60,000          | 67,531  |
| 2008 | 48  | 60,000          | 69,556  |
| 2009 | 49  | 60,000          | 71,643  |
| 2010 | 50  | 60,000          | 73,792  |
| 2011 | 51  | 60,000          | 76,006  |

You can return to the Family Information screen by clicking *Show* on the Family Tool Bar after you have entered all the data. Next click the *Create Reports* button. This will tell the program to display the *Reports* Menu, where you select the reports you'd like to generate.

The Main Report, which shows annual consumption, saving, and life insurance recommendations and a number of other key features of your family's plan, is always generated. If you want additional detailed reports, click *Detailed Reports*. You can also ask the program to generate survivor reports. Finally, you

can choose to generate Monte Carlo reports if you purchased *ESPlannerPlus* and previously activated Monte Carlo on the Family Information screen.

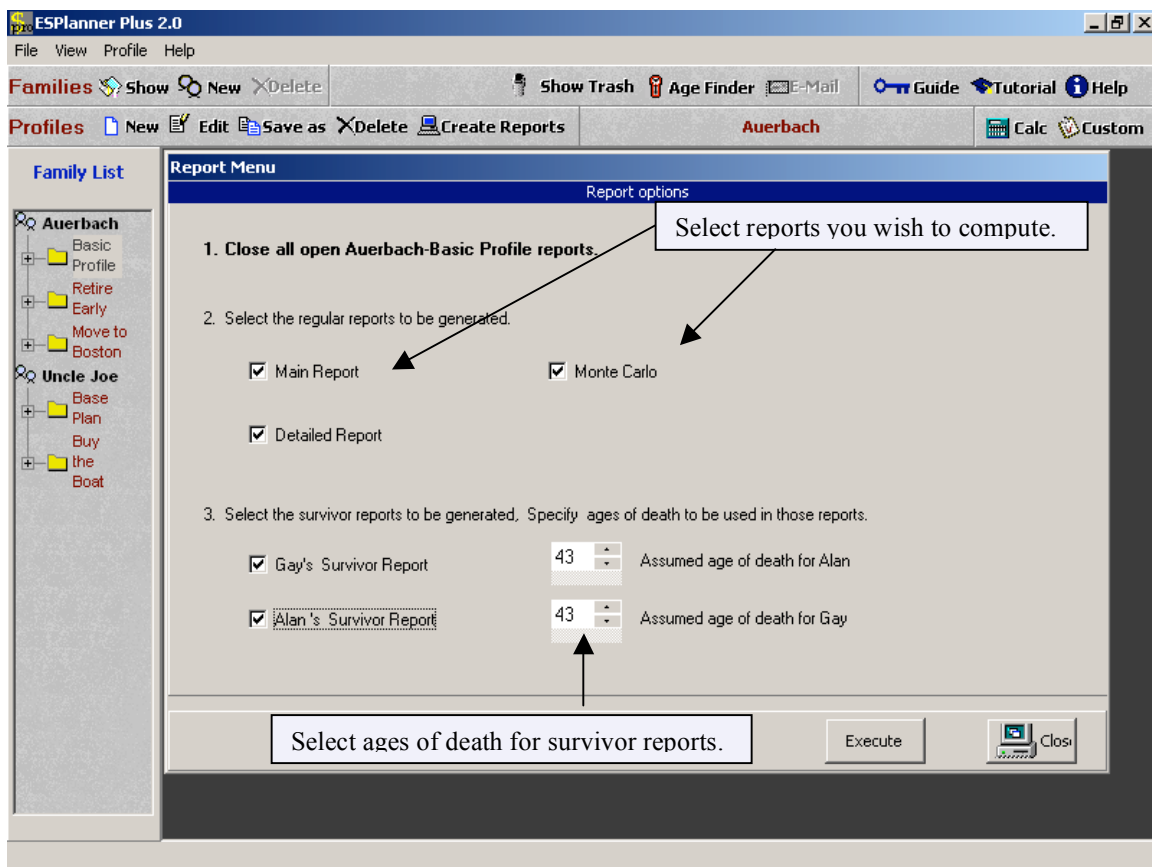
The Monte Carlo results are based on 500 simulations. In each simulation, the program draws rates of returns at random for regular assets as well as retirement account assets in each future year based on the portfolio that users indicate will be held in that year. In the case of married or partnered households in which each spouse/partner has retirement account assets, separate rates of return are drawn for each future year for the couple's regular assets and for each spouse's/partner's retirement account assets taking into account the separate portfolios specified for regular assets and for each spouse's/partner's retirement account assets.

As indicated below, there are a number of pre-programmed assets. But you can also enter your own assets. All assets are assumed to be joint log normally distributed. The rates of return used to generate mean returns and the variance/co-variance matrix of returns are based on data reported by Ibbotson and Morgan Stanley. In all cases, we use the longest time series available.

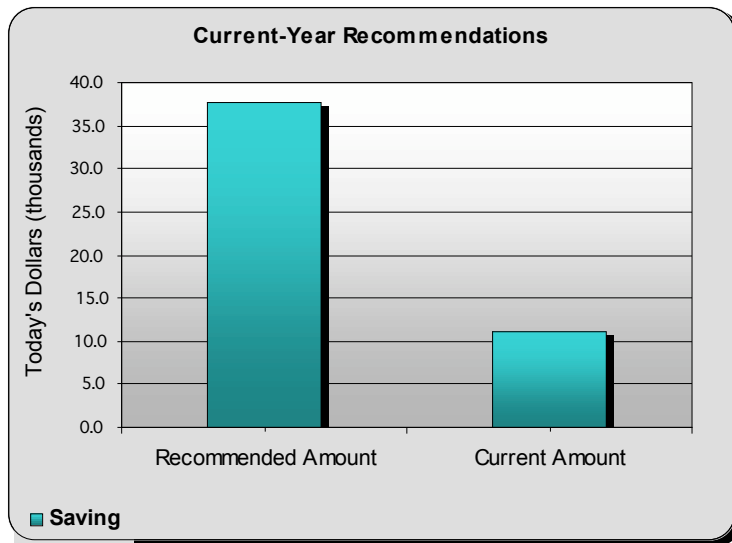
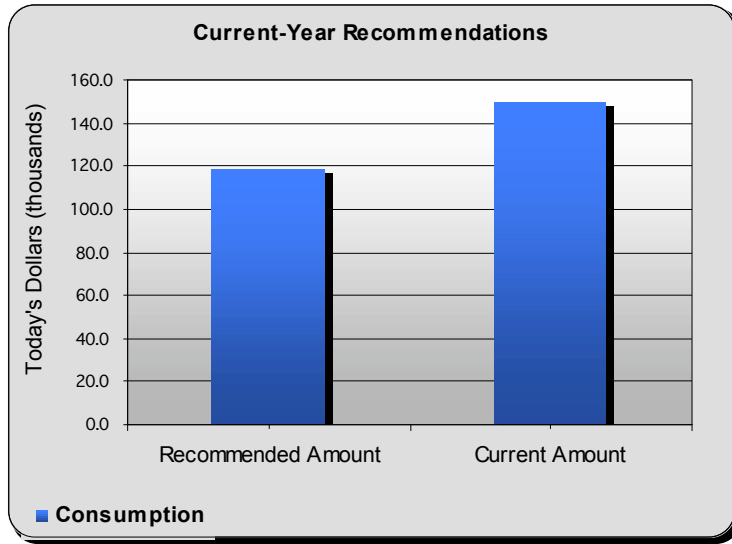
In the cases of families who are married or partnered, *ESPlanner* generates survivor reports. These reports show how survivors will fare if one of the two spouses/partners passes away, assuming the program's recommended amount of life insurance had been purchased and the couple had followed the program's recommended saving plan. The program generates these reports for every possible age at which each spouse or partner may die. To see these survivor reports, you need to specify that ages at which you want to assume the spouse and partner will die. The *Report Menu* screen also asks you to specify these ages

After you click *Create Reports* on the reports menu, the program will produce Excel files containing the reports selected. The reports consist of charts and tabular displays of recommendations, balance sheets, etc. You can use the Excel charting function to make additional charts and graphs. All of these reports can be printed.

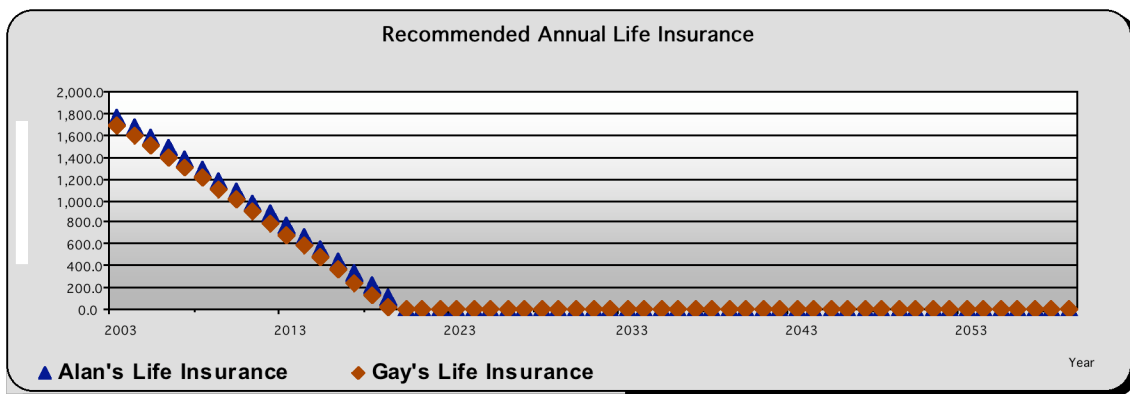
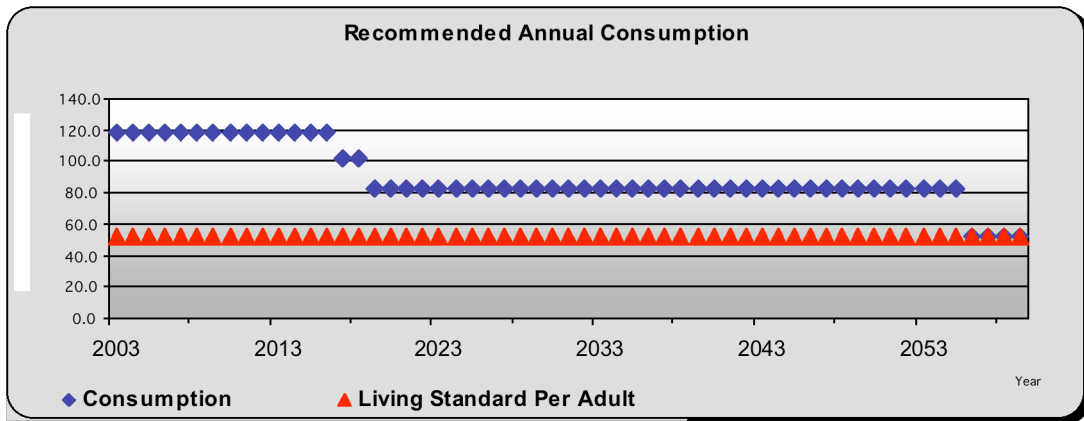
## Selecting Reports



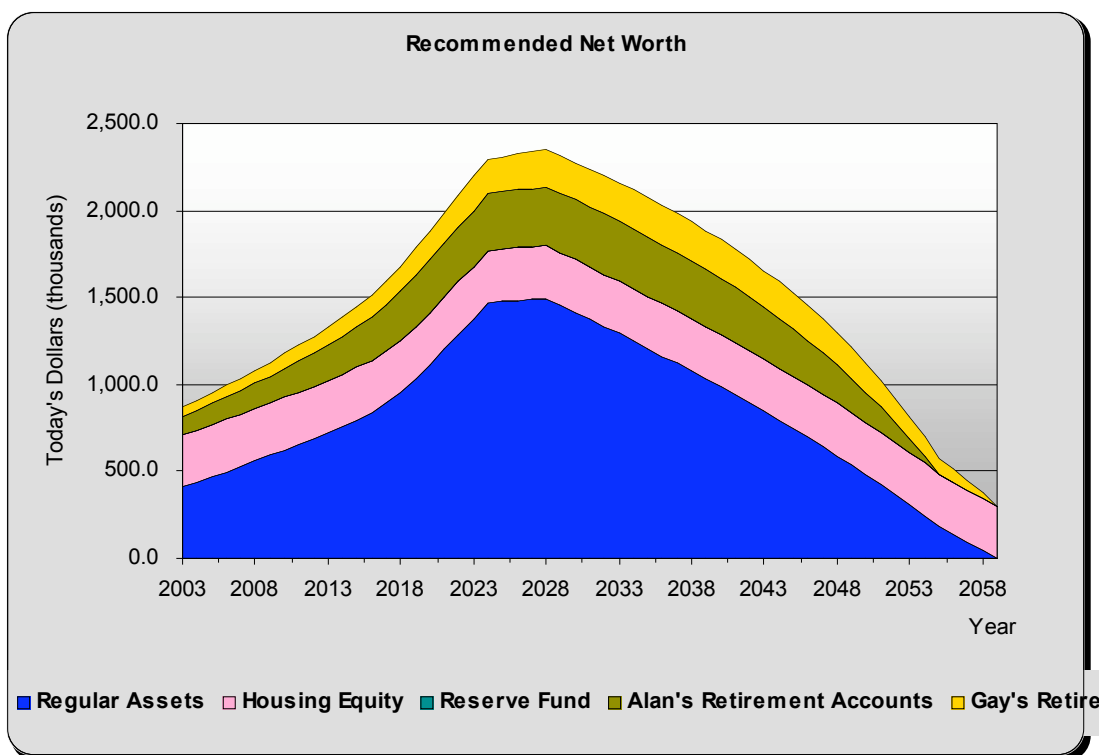
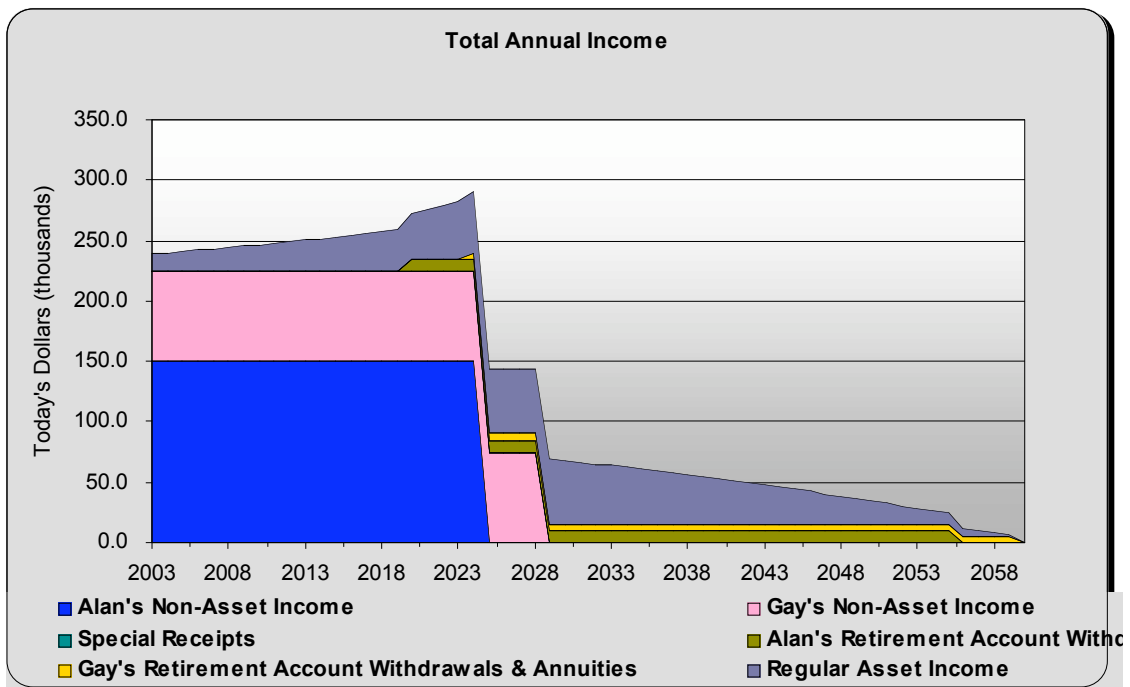
## Examples of ESPlanner Charts



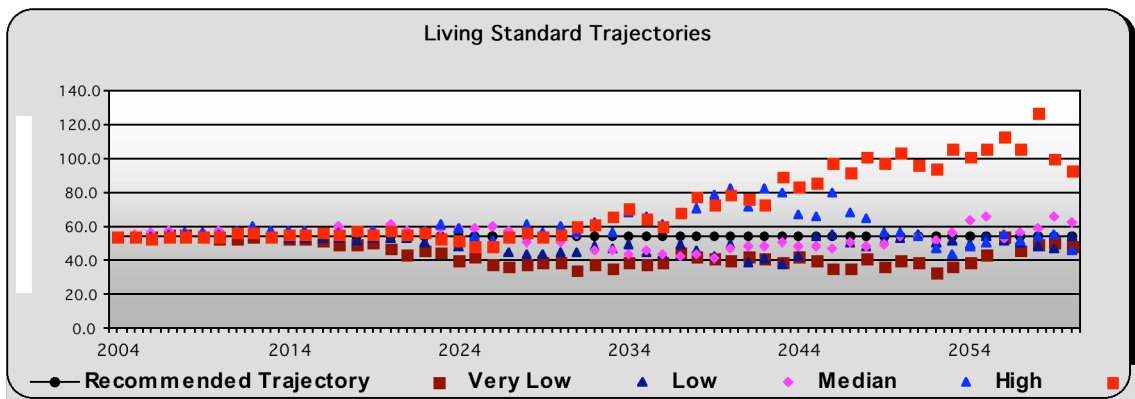
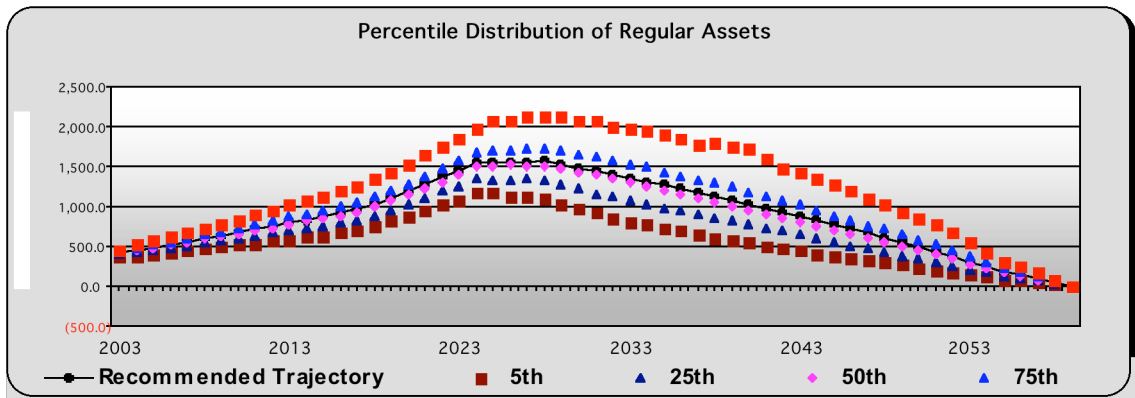
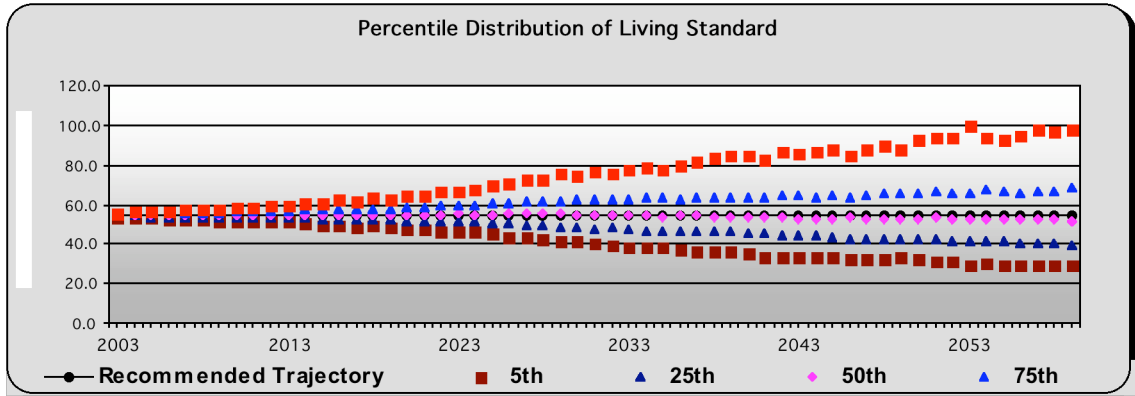
## Additional Examples of *ESPlanner* Charts



## Additional Examples of *ESPlanner* Charts



## Examples of Monte Carlo Charts



## Examples of ESPlanner Tables

Microsoft Excel - Auerbach\_Basic Profile\_Main\_report2431

File Edit View Insert Format Tools Data Window Help

100% 10 B U

110

|    | A                                 | B                    | C              | D                  | E | F | G | H | I |
|----|-----------------------------------|----------------------|----------------|--------------------|---|---|---|---|---|
| 1  | Decision                          | 2003 Recommendations |                |                    |   |   |   |   |   |
| 2  |                                   | Recommended Amount   | Current Amount | Recommended Change |   |   |   |   |   |
| 3  | Consumption                       | 126,069              | 149,971        | (23,903)           |   |   |   |   |   |
| 4  | Saving                            | 30,070               | 11,000         | 19,070             |   |   |   |   |   |
| 5  | Alan's Life Insurance             | 1,687,790            | 300,000        | 1,387,790          |   |   |   |   |   |
| 6  | Gay's Life Insurance              | 1,628,637            | 300,000        | 1,328,637          |   |   |   |   |   |
| 7  | Household Life Insurance Premiums | 5,895                | 1,062          | 4,833              |   |   |   |   |   |
| 8  |                                   |                      |                |                    |   |   |   |   |   |
| 9  |                                   |                      |                |                    |   |   |   |   |   |
| 10 |                                   |                      |                |                    |   |   |   |   |   |

Ready

Charts | CurrentRecommendations | AnnualRecommendations | RegularAssets | T

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File Edit View Insert Format Tools Data Window Help

100% 10 B U

AD58

|    | A    | B          | C         | Annual Recommendations |        |                       |                      | Living Standard Per Adult |
|----|------|------------|-----------|------------------------|--------|-----------------------|----------------------|---------------------------|
|    | Year | Alan's Age | Gay's Age | Consumption            | Saving | Alan's Life Insurance | Gay's Life Insurance |                           |
| 2  |      |            |           |                        |        |                       |                      |                           |
| 3  | 2003 | 43         | 39        | 126,069                | 30,070 | 1,687,790             | 1,628,637            | 54,983                    |
| 4  | 2004 | 44         | 40        | 126,069                | 30,068 | 1,593,637             | 1,533,671            | 54,983                    |
| 5  | 2005 | 45         | 41        | 126,069                | 29,163 | 1,499,610             | 1,438,821            | 54,983                    |
| 6  | 2006 | 46         | 42        | 126,069                | 30,109 | 1,403,781             | 1,342,157            | 54,983                    |
| 7  | 2007 | 47         | 43        | 126,069                | 30,283 | 1,306,942             | 1,244,471            | 54,983                    |
| 8  | 2008 | 48         | 44        | 126,069                | 31,392 | 1,208,114             | 1,144,785            | 54,983                    |
| 9  | 2009 | 49         | 45        | 126,069                | 31,791 | 1,108,321             | 1,044,375            | 54,983                    |
| 10 | 2010 | 50         | 46        | 126,069                | 32,255 | 1,007,642             | 943,064              | 54,983                    |
| 11 | 2011 | 51         | 47        | 126,069                | 32,823 | 905,857               | 840,631              | 54,983                    |
| 12 | 2012 | 52         | 48        | 126,069                | 33,533 | 802,800               | 736,972              | 54,983                    |
| 13 | 2013 | 53         | 49        | 126,069                | 34,345 | 698,421               | 632,026              | 54,983                    |
| 14 | 2014 | 54         | 50        | 126,069                | 35,294 | 592,614               | 525,623              | 54,983                    |
| 15 | 2015 | 55         | 51        | 126,069                | 36,407 | 483,962               | 416,075              | 54,983                    |

Ready

## Additional Examples of ESPlanner Tables

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File Edit View Insert Format Tools Data Window Help

AD89

|    | A    | B          | C         | D              | E              | F     | G        | H              |
|----|------|------------|-----------|----------------|----------------|-------|----------|----------------|
| 1  | Year | Alan's Age | Gay's Age | Regular Assets |                |       |          |                |
| 2  |      |            |           | Total Income   | Total Spending | Taxes | Saving   | Regular Assets |
| 47 | 2047 | 87         | 83        | 40,410         | 87,973         | 4,232 | (51,794) | 642,997        |
| 48 | 2048 | 88         | 84        | 38,520         | 87,973         | 3,454 | (52,907) | 590,090        |
| 49 | 2049 | 89         | 85        | 36,588         | 87,973         | 2,661 | (54,046) | 536,044        |
| 50 | 2050 | 90         | 86        | 34,615         | 87,973         | 1,931 | (55,289) | 480,756        |
| 51 | 2051 | 91         | 87        | 32,597         | 87,973         | 1,183 | (56,558) | 424,197        |
| 52 | 2052 | 92         | 88        | 30,532         | 87,973         | 415   | (57,856) | 366,342        |
| 53 | 2053 | 93         | 89        | 28,420         | 87,973         | 0     | (59,552) | 306,790        |
| 54 | 2054 | 94         | 90        | 26,246         | 87,973         | 0     | (61,726) | 245,064        |
| 55 | 2055 | 95         | 91        | 23,993         | 87,973         | 0     | (63,979) | 181,084        |
| 56 | 2056 |            | 92        | 12,117         | 54,983         | 0     | (42,866) | 138,218        |
| 57 | 2057 |            | 93        | 10,552         | 54,983         | 0     | (44,431) | 93,787         |
| 58 | 2058 |            | 94        | 8,930          | 54,983         | 0     | (46,053) | 47,734         |
| 59 | 2059 |            | 95        | 7,249          | 54,983         | 0     | (47,734) | 0              |

Ready

Microsoft Excel - Auerbach\_Basic Profile\_Main\_report2431

File Edit View Insert Format Tools Data Window Help

X59

|    | A    | B          | C         | D              | E              | F            | G                          | H                         | I         |
|----|------|------------|-----------|----------------|----------------|--------------|----------------------------|---------------------------|-----------|
| 1  | Year | Alan's Age | Gay's Age | Net Worth      |                |              |                            |                           |           |
| 2  |      |            |           | Regular Assets | Housing Equity | Reserve Fund | Alan's Retirement Accounts | Gay's Retirement Accounts | Net Worth |
| 3  | 2003 | 43         | 39        | 408,248        | 300,000        | 0            | 106,760                    | 53,380                    | 868,388   |
| 4  | 2004 | 44         | 40        | 438,315        | 300,000        | 0            | 113,977                    | 56,988                    | 909,281   |
| 5  | 2005 | 45         | 41        | 467,478        | 300,000        | 0            | 121,682                    | 60,841                    | 950,000   |
| 6  | 2006 | 46         | 42        | 497,587        | 300,000        | 0            | 129,907                    | 64,954                    | 992,448   |
| 7  | 2007 | 47         | 43        | 527,870        | 300,000        | 0            | 138,689                    | 69,345                    | 1,035,904 |
| 8  | 2008 | 48         | 44        | 559,262        | 300,000        | 0            | 148,064                    | 74,032                    | 1,081,359 |
| 9  | 2009 | 49         | 45        | 591,053        | 300,000        | 0            | 158,074                    | 79,037                    | 1,128,164 |
| 10 | 2010 | 50         | 46        | 623,309        | 300,000        | 0            | 168,759                    | 84,380                    | 1,176,447 |
| 11 | 2011 | 51         | 47        | 656,131        | 300,000        | 0            | 180,167                    | 90,084                    | 1,226,382 |
| 12 | 2012 | 52         | 48        | 689,664        | 300,000        | 0            | 192,347                    | 96,173                    | 1,278,184 |
| 13 | 2013 | 53         | 49        | 724,009        | 300,000        | 0            | 205,349                    | 102,675                   | 1,332,033 |
| 14 | 2014 | 54         | 50        | 759,303        | 300,000        | 0            | 219,231                    | 109,615                   | 1,388,149 |
| 15 | 2015 | 55         | 51        | 795,710        | 300,000        | 0            | 234,051                    | 117,025                   | 1,446,786 |

Ready

## Activating Contingent Planning and Monte Carlo Simulations

When you install the program and begin using it the first time, you'll notice that both the *Contingent Planning* and the *Monte Carlo* (if you purchased the *Plus* version) functions are turned off. This is to speed your initial use of the program and to ease your learning experience. Once you are comfortable with the program's interface and standard reports, you can activate either Contingent Planning or Monte Carlo functions or both by clicking on the check boxes at the bottom right corner of the Family Information screen.

### Activating Contingent Planning and Monte Carlo Simulations

The screenshot shows the ESPlanner Plus 2.0 software interface. The main window is titled "Family Information" and displays various fields for client data. On the left, a "Family List" sidebar shows a tree structure with "Auerbach" selected, containing sub-items like "Basic Profile", "Inputs", "Main Report", "Detailed Report", "Alan's Survivor Report", "Gay's Survivor Report", "Monte Carlo Report", "Monte Carlo Trajectories Report", "Retire Early", and "Move to Boston". Below this is "Uncle Joe".

The "Family Information" form includes the following sections:

- Client Information:** Client Name (Auerbach), Date of birth (1/1/1960), Spouse/Partner (Gay), Date of birth (1/1/1960). Radio buttons for Single, Married (selected), and Partnered.
- Address:** Street (4233 Life Cycle Dr.), City (Berkeley), State (CA), Zip (99773).
- Electronic Mail:** Email 1 (auerbach@berkeley.edu), Email 2 (gay@aol.com).
- Phone Numbers:** Home (763 233-9834), Work (763 245-9812), Mobile (763 998-0808), Fax (763 445-9812).
- Children under 19:** A list showing "Andy, born in 1993" and "Ethan, born in 2005".
- Activation Section:** A callout box with the text "Click here to activate Contingent Planning and/or Monte Carlo simulations." points to two checkboxes: "Monte Carlo simulations" and "Contingent planning", both of which are checked.

## Optimizing Your Family's Plans

Once you have generated a basic plan, there are a number of options you can explore to raise your family's sustainable living standards. Any changes that you make that do raise your family's living standard will show up in the program's reports as higher recommended levels of consumption. Having your family retire later, send its children to less expensive colleges, downsize their homes, move to states with lower income taxes, and leave smaller bequests are examples of ways in which to raise your family's consumption levels. The great advantage of *ESPlanner* is being able to learn, within seconds, how these choices would affect your family's living standard (measured in terms of recommended consumption) knowing that all the tax and social security benefit implications of those choices are being fully considered.

Households that cannot perfectly smooth their living standards over their lifetimes, because doing so would require going into debt, are forced to live at a lower living standard when young than when old. For such households, one needs to consider how each particular input change affects not just consumption when young, but also when old.

In addition to helping your family to sort out choices like those just mentioned *ESPlanner* can be used to make sure your family's plan minimizes lifetime tax payments and maximizes lifetime social security benefits. When it comes to reducing lifetime tax payments, there are several options to consider. One thing to check is whether your family should contribute more or less to tax-deferred accounts. Although it is commonly believed that maximizing contributions to tax-deferred accounts, including 401(k) and traditional IRA plans, lowers lifetime tax payments, this is not necessarily the case for three reasons. First, withdrawals of principal plus interest from tax-deferred accounts can put your family into higher tax brackets. Second, these withdrawals can trigger federal income taxation of your family's social security benefits. And third, tax rates may be higher when your family makes its withdrawals. Note, in this regard, that the *Assumptions* folder allows you to specify future increases in federal income tax rates, state income tax rates, or payroll tax rates.

Another option to consider is the timing of when you and your spouse/partner begin to make withdrawals from your tax-deferred accounts. The program allows you to choose the age of retirement account withdrawals. The longer one delays withdrawing benefits from tax-deferred retirement accounts, the greater the savings from being able to earn capital income on a tax-free basis. However, taking out smaller amounts over longer periods of time can affect the extend of social security benefit taxation as well as the income tax rates at which withdrawals are taxed.

A third option to explore is the timing of when your family begins to collect its social security benefits. Different initial dates of collection will affect not just the duration of benefit receipt, but also the amount of the benefits collected each year. The initial collection date can also affect the degree to which these benefits are subject to taxation under federal and state income taxes. For example, having a family member start receiving social security benefits at age 65 as well as initiating 401(k) withdrawals at age 65 may increase

lifetime tax payments relative to having the family member receive social security benefits starting at age 62 and wait until age 71 to begin withdrawing retirement account assets.

A fourth issue to explore is the order in which to withdraw funds from retirement accounts. One can, for example, tell the program to withdrawal funds first from 401(k) plans, next from traditional IRAs, and finally from Roth IRAs. But this may not minimize lifetime tax payments.

When it comes to decisions about when and how to make retirement account withdrawals and when to start collecting social security benefits, there are no general rules that minimize lifetime tax payments and maximize lifetime social security benefits. The best decision for a particular household depends on that household's other economic variables and life-style decisions. But *ESPlanner*'s main and detailed reports run within seconds on reasonably fast computers, so you can very quickly explore alternative strategies and find the best combination for your family.

### **Monte Carlo Simulations**

*ESPlannerPlus*' Monte Carlo simulations are designed to let you see how alternative portfolio choices will affect both the level and variability of your family's living standard, income levels, and regular and retirement account asset levels through time. Unlike other Monte Carlo simulators that only show the variability of a household's assets at retirement, *ESPlanner* recognizes that you will not wait until retirement to adjust its consumption to the returns it earns on its savings. The program uses dynamic programming to determine how your family would adjust its consumption spending level each year given the realized rates of return and a desire for a smooth living standard going forward.

The dynamic program also takes into account the fact that receiving higher or lower rates of return in a given year will affect one's tax liabilities in the current as well as all future years. Stated differently, our Monte Carlo simulations take full account of the tax implications of the path of returns that your family may earn on both its regular assets and retirement accounts.

The actual Monte Carlo simulations are the result of considering 500 paths of randomly drawn rates of return earned on both regular and retirement account assets. If, for example, your family is married, the program will draw rates of return for each year for regular assets as well as for each spouse's retirement accounts taking into account the composition of regular assets and of each spouse's retirement account assets in the particular year in question.

To be more precise, the program includes 12 "canned securities," such as large cap stock, corporate bonds, and European equities, which you can use to build up to 10 different portfolios for your family. The program takes into account how these 12 securities have performed and co-varied historically.

You can also add additional securities that you want to include in the 10 portfolios. In entering your own assets, the program asks you about their expected rates of return and variability relative to large cap stock. The program assumes that the returns on your own assets do not co-vary with the 12 canned securities.

Once you've built (specified) your portfolios, you can tell the program which of these portfolios the family will hold in each future year when it comes to his/her regular assets, which of these portfolios the family will hold in each future year when it comes to his/her retirement account assets, and which of these portfolios the family's spouse/partner will hold in each future year when it comes to the spouse's/partner's retirement account assets. The following screens indicate how you can build and implement portfolios.

In each of the 500 the Monte Carlo simulations the program draws rates of return at random and for each future year for each of the 12 canned securities as well as the individualize securities you've entered. These annual draws take into account the covariance (the co-movement) of the returns on these securities as well as their expected returns. The program then uses these rates of return to determine how the particular portfolios being held by the family in its regular assets and retirement accounts will fare. As the simulation moves forward from one year to the next, the program adjusts consumption and saving levels as dictated by the dynamic program, which is run prior to generating the simulations. Again, the dynamic program takes into account all possible return outcomes as well as their tax implications in determining how the household can expect to smooth its living standard going forward.

### **Borrowing Constraints**

Many, if not most, young and middle-aged households are borrowing or credit constrained. Such households typically have large "off-the-top" expenses, including mortgage payments, loan payments, childcare, and college tuition. They also either can't or don't want to borrow against their future income. For these households, perfectly smoothing their members' living standards through time is infeasible because it requires going into debt.

## Building Portfolios

ESPlanner Plus 2.0

File View Profile Help

Families Show New Delete Show Trash Age Finder E-Mail Guide Tutorial Help

Profiles New Edit Save as Delete Create Reports Auerbach's Basic Profile Calc Custom

Folder List x

- ☒ Earnings
- ☒ Special
- ☒ Estate
- ☒ Assets & Saving
- ☒ Retirement Accounts
- ☒ Pensions & Annuities
- ☒ Primary Home
- ☒ Vacation Home
- ☒ Social Security
- ☒ Assumptions
- ☒ Monte Carlo
- ☒ Contingent Plans

Monte Carlo

Build Portfolios Implement Portfolios

Default Portfolio 2 Portfolio 3 Portfolio 4 Portfolio 5 Portfolio 6 Portfolio 7 Portfolio 8 Portfolio 9 Portfolio 10

Change portfolio name if desired Default

1. Select an asset

Long-term gov bonds  
Long-term inflation-indexed gov bond  
Intermediate term gov bonds  
Short-term gov bonds  
Non-US equity  
Pacific basin  
Europe  
Emerging markets equity

2. Set portfolio share and click Add % 5 Add

To add a new asset click New New

To delete an asset, select it and click Delete Delete

To remove an entry, select it and click Remove Remove

To restore original settings, click Restore Restore

| Asset                  | Share | Av. R... | Risk   |
|------------------------|-------|----------|--------|
| Cash                   | 2.5%  | -2.96%   | 4.5%   |
| Long-term gov bonds    | 50%   | 2.34%    | 25.5%  |
| Large cap stocks       | 14.5% | 6.95%    | 100.0% |
| Small cap stocks       | 5%    | 8.46%    | 226.5% |
| Europe                 | 23%   | 4.63%    | 95.3%  |
| Emerging markets eq... | 5%    | 6.80%    | 217.6% |
|                        |       |          |        |
|                        |       |          |        |
|                        |       |          |        |
|                        |       |          |        |
|                        |       |          |        |

## Implementing Portfolio Choices

**ESPlanner Plus 2.0**

File View Profile Help

**Families** Show New XDelete Show Trash Age Finder E-Mail Guide Tutorial Help

**Profiles** New Edit Save as XDelete Create Reports **Auerbach's Basic Profile** Calc Custom

**Folder List** x

- Earnings
- Special
- Estate
- Assets & Saving
- Retirement Accounts
- Pensions & Annuities
- Primary Home
- Vacation Home
- Social Security
- Assumptions
- Monte Carlo
- Contingent Plans

**Monte Carlo**

Build Portfolios Implement Portfolios

1. Select

☐ Regular Assets

☐ Alan's Retirement Account

☒ Gay's Retirement Account

2. Choose a portfolio from the list

**Portfolios**

- Default
- Go for Broke
- Play It Safe
- Uncle Joe's Picks
- Portfolio 5
- Portfolio 6
- Come to Me Baby
- Portfolio 8
- Portfolio 9
- Portfolio 10

3. Specify the years you'll hold the selected portfolio

First year 2007

Last Year 2016

**Portfolio Choice**

|   | Year | Regular Assets | Gay's Retirement Account | Alan's Retirement Account |
|---|------|----------------|--------------------------|---------------------------|
| ▶ | 2003 | Go for Broke   | Default                  | Uncle Joe's               |
|   | 2004 | Go for Broke   | Default                  | Uncle Joe's               |
|   | 2005 | Go for Broke   | Default                  | Uncle Joe's               |
|   | 2006 | Go for Broke   | Default                  | Uncle Joe's               |
|   | 2007 | Go for Broke   | Come to Me               | Uncle Joe's               |
|   | 2008 | Go for Broke   | Come to Me               | Uncle Joe's               |
|   | 2009 | Go for Broke   | Come to Me               | Uncle Joe's               |
|   | 2010 | Go for Broke   | Come to Me               | Default                   |
|   | 2011 | Go for Broke   | Come to Me               | Default                   |
|   | 2012 | Go for Broke   | Come to Me               | Default                   |
|   | 2013 | Go for Broke   | Come to Me               | Default                   |
|   | 2014 | Go for Broke   | Come to Me               | Default                   |
|   | 2015 | Go for Broke   | Come to Me               | Default                   |

Set Allocation

Clear Grid

*ESPlanner* takes borrowing limits into account in its calculations and recommendations. Specifically, it smoothes each household's living standard to the maximum extent possible without violating the household's self-declared non-mortgage borrowing limit. The software permits multiple intervals (time periods) during which the household is borrowing constrained. It not only minimizes difference in living standards across such intervals, it also smoothes living standards within each interval.

You can readily tell when borrowing limitations prevent your family from achieving a perfectly smooth living standard. All you need to do is to examine the regular asset report. If regular assets equal the borrowing limit (set at zero in most cases), you know that the household is borrowing constrained prior to and including the year that regular assets hit the limit. In the first subsequent year that regular assets rise about the limit, you'll see recommended consumption increasing as well. The reason is that the household is no longer constrained and can consume at a higher level.

To make this more concrete, consider the case of a low-income couple that will receive a \$2 million distribution from a trust in ten years. Assume the couple can't borrow against the future income. *ESPlanner* will recommend the couple spend down its assets so they reach zero in the year before the \$2 million is received. In the year it's received, asset will go from zero to a large positive amount and recommended consumption will rise. We illustrate this below in [\*Joe and Sally Receive an Inheritance\*](#).

## Entering Borrowing Limit

The screenshot shows the ESPlanner Plus 2.0 interface. The 'Economic Assumptions' window is open, displaying the 'Economic Variables' tab. The 'Maximum Age of Life' section shows 'Maximum age of life for Alan' at 95 and 'Maximum age of life for Gay' at 95. The 'Nominal Rates of Return on' section shows 'Regular assets' at 6%, 'Alan's retirement accounts' at 8.5%, and 'Gay's retirement accounts' at 6%. The 'Other' section shows 'Inflation rate' at 3%, 'Two can live as cheaply as' at 1.6, 'Transactions costs if selling homes' at 6%, 'Maximum indebtedness' at 0, 'Load charged on purchase of life insurance' at 15%, and 'Load charged on purchase of annuities' at 15%. A callout box points to the 'Maximum indebtedness' field with the text 'Enter Maximum Indebtedness here.'

### Getting Started

To get started, you need to enter your family's demographic information. To do so, click *New* on the Family Tool Bar. A window will appear that solicits your name, that of your spouse/partner (if you have a spouse or partner) and you marital and whether the family is single, married, or partnered.

Once you have entered your family members' names and its marital status (single, married, or partnered), click *Add*. The family's last name will appear on the family list and you will be able to enter your family's basic demographic information. This includes your family members' dates of birth, names and years of birth of children, states of residence, addresses, and contact information.

## Entering a New Family

**Click the New button on the Families Tool Bar to Enter a New Family**

**Enter family's names and marital status in this window and click Add.**

**ESPlanner Plus 2.0**  
File View Profile Help

**Families** Show New Delete Show Trash Age Finder E-Mail Guide Tutorial Help

**Profiles** New Edit Save as Delete Create Reports Auerbach Calc Custom

ion  
7/2003 Created on: 11/7/2003

**Add New Family**  
Enter the new family's name and click add.

Name Lowell Williams  
Spouse Derek Jeter

Marital Status  
☐ Single ☐ Married ☒ Partnered

Address  
Street 4233 L  
City Berkel  
Zip 99773

Electronic Mail  
Email 1 auerbach@berkeley.edu  
Email 2 gay@aol.com

Phone Numbers  
Home 763 233-9834 Work 763 245-9812  
Mobile 763 998-0808 Fax 763 445-9812

Notes  
Reminder: financial planning is fun.

Activate  
☒ Monte Carlo simulations ☒ Contingent planning

Move to Boston  
Uncle Joe

Add Cancel

## Entering Basic Information for a New Family

**ESPlanner Plus 2.0**  
File View Profile Help

**Families** Show New Delete Show Trash Age Finder E-Mail Guide Tutorial Help

**Profiles** New Edit Save as Delete Create Reports **Williams** Calc Custom

**Family List**

- Auerbach
- Uncle Joe
- Williams

**Family Information**  
Modified on: 11/7/2003 Created on: 11/7/2003

Client Name Lowell Williams Date of birth 1 / 1 / 1968 ☐ Single  
Spouse/Partner Derek Jeter Date of birth 1 / 1 / 1974 ☐ Married ☒ Partnered

**Address**  
Street 7744 Fifth Ave.  
City NY State NY Zip 87231

**Electronic Mail**  
Email 1 derek@yankees.com  
Email 2 williams@esplanner.com

**Phone Numbers**  
Home 773 994-5544 Work 744 554-9832  
Mobile 634 994-7343 Fax 773-774-0098

**Children under 19**  
Name Roger Born in 2001 Add  
Babe born in 2003 Remove  
Roger born in 2001

**Notes**  
Financial planning beats sex. |

**Activate**  
☒ Monte Carlo simulations ☒ Contingent planning

**Enter names, dates of birth, addresses, names and birth years of children, contact information, and any special notes.**

## Joe and Sally

To help you learn how to use *ESPlanner*'s interface and interpret its results, we start out with a simple case and then modify inputs to illustrate *ESPlanner*'s versatility in handling multiple financial circumstances and objectives. This case was run without activating contingent planning or Monte Carlo simulations, which we illustrate in subsequent cases. Because contingent planning is turned off, the values of contingent variables, like the wife's earnings if the husband passes away, are assumed to be the same as the non-contingent variables (the wife's earnings if the husband doesn't pass away prior to reaching his maximum age of life). And because the Monte Carlo simulations are turned off, we enter the rates of return on regular and retirement account assets in the *Assumptions* input folder.

Note that if you set up and run the cases presented here, your results may differ from those presented because we are continuously updating tax and Social Security benefit formulae. Also, this tutorial was written in 2003, and it may be a later year as you read this.

Now, please meet Joe and Sally Whitney, who live in Oklahoma. Joe is 33, and Sally is 28. They have one child, Joe Jr., born in 1998. A second child, Sally Jr., is planned for 2005. After clicking *New* on the Family Tool Bar and entering the Whitney's names, we entered their demographic and contact data as shown below. Note that the program allows you to enter future children.

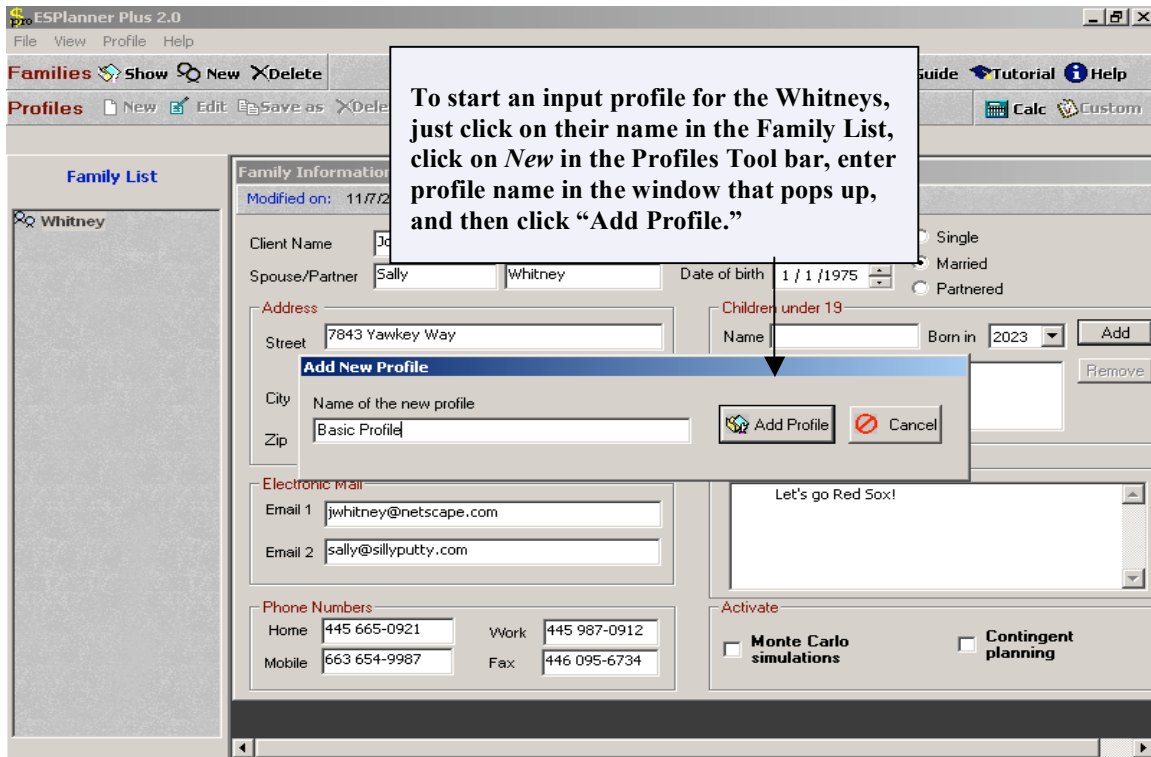
### The Whitneys' Basic Data

The screenshot displays the ESPlanner Plus 2.0 software interface. The main window is titled "Family Information" and shows the basic data for the Whitney family. The form is organized into several sections:

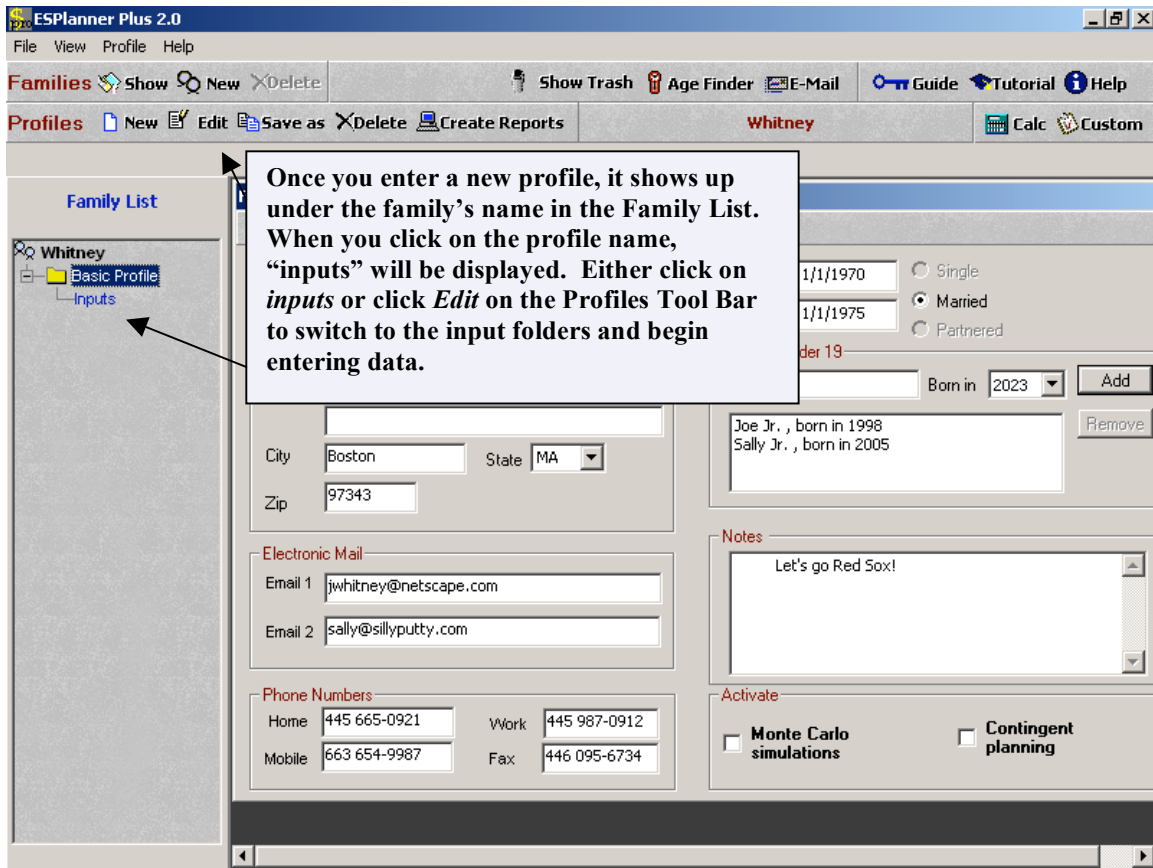
- Family List:** A sidebar on the left shows "Whitney" as the selected family.
- Family Information:** The main area contains the following fields:
  - Client Name:** Joe Whitney
  - Spouse/Partner:** Sally Whitney
  - Date of birth:** 1 / 1 / 1970 (Joe) and 1 / 1 / 1975 (Sally)
  - Address:** 7843 Yawkey Way, Boston, MA 02111
  - Electronic Mail:** Email 1: jwhitney@netscape.com, Email 2: sally@sillyputty.com
  - Phone Numbers:** Home: 445 665-0921, Work: 445 987-0912, Mobile: 663 654-9987, Fax: 446 0955-6734
  - Children under 19:** Sally Jr. (born in 2005), Joe Jr. (born in 1998)
  - Notes:** Let's go Red Sox!
  - Activate:** Monte Carlo simulations (unchecked), Contingent planning (unchecked)

Next we clicked *New* on the Profiles Tool Bar and named our file *Basic Plan*. (Note, “Basic Plan” is the default name, but you can overwrite it.) Once we clicked *Add Profile*, this file name showed up under the Whitney’s name on the Family List.

### Starting a New Profile



### Entering Inputs



## Entering Joe's and Sally's Earnings

Both Joe and Sally plan to retire at age 65. Joe is a horticulturist and makes \$75,000 a year teaching at the University of SmartyPants. He expects his university wages to stay even with inflation through time. In addition, Joe does consulting through his company, We Grow Everything, Inc. After expenses, he clears \$25,000 a year from his company. Joe expects this self-employment income to stay fixed in today's dollars until he reaches age 50, after which he plans to stop consulting.

Sally plans to retire at age 60. She's making \$35,000 a year running a craps table at the local casino. She expects her wages to grow 3 percentage points faster than inflation for the next 6 years and then stay even with inflation.

To enter the Whitneys' earnings, we clicked once on the heading *Inputs* under Basic Plan. This opened the *Employee Wages* input screen. After leaving Joe's retirement age at the default value of 65, we noted that 2003 was selected as the first year for which we need to enter earnings. Hence, in step 3, we entered \$75,000 and clicked *Apply*. Voila! That amount showed up in the grid for 2003.

Since Joe expects no real earnings growth in the future, we filled in all future earnings by simply leaving the real growth rate in step 4 at zero, and clicking *Grow*. This filled in all future earnings, measured in

today's dollars, as \$75,000. The grid also displays the actual dollar amounts of future earnings in the column under the heading *Dollars*. The conversion of earnings measured into today's dollars into earnings in actual dollars is based on the assumed inflation rate, which is set in the *Assumptions* input folder. The default value for the annual inflation rate is 3 percent.

Next we entered Joe's self-employment earnings by clicking on the – yes, you got it – *Self-Employment Earnings* tab. We selected 2003 and entered \$25,000. Then we grew those earnings at a zero percent growth rate. Finally, we selected 2020, the year Joe becomes 50, entered earnings of zero for that year, and then hit the *Grow* button. This zeroed out Joe's self-employment earnings from age 51 through 65.

To enter Sally's earnings, we simply selected Sally's name in step 1. Next we set her retirement age to 60. But after entering her 2003 earnings at \$35,000, we set the real growth rate in step 3 at 3 percent and clicked *Grow*. This grew Sally's earnings, measured in today's dollars, by 3 percent through age 64 – her last year of work. But Sally's earnings are going to grow for only 6 years, so we next selected year 2009 in the grid, set the growth rate to zero, and clicked *Grow*. This generated the earnings inputs shown below.

## Entering Joe's Employee Wages

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**Folder List**

- Earnings
- Special
- Estate
- Assets & Saving
- Retirement Accounts
- Pensions & Annuities
- Primary Home
- Vacation Home
- Social Security
- Assumptions

**Earnings**

1. Set Retirement Date

☒ Joe 1 / 1 / 2035 Age 65

☐ Sally 1 / 1 / 2040 Age 65

**Employee Wages** | **Self-Employment Earnings**

2. Select a year on the grid

3. Enter earnings for 2003 in today's dollars 75000 Apply

**Annual Employee Wages for Joe**

| Year | Age | Today's Dollars | Dollars |
|------|-----|-----------------|---------|
| 2003 | 33  | 75,000          | 75,000  |
| 2004 | 34  | 75,000          | 77,250  |
| 2005 | 35  | 75,000          | 79,568  |
| 2006 | 36  | 75,000          | 81,955  |
| 2007 | 37  | 75,000          | 84,413  |
| 2008 | 38  | 75,000          | 86,946  |
| 2009 | 39  | 75,000          | 89,554  |
| 2010 | 40  | 75,000          | 92,241  |
| 2011 | 41  | 75,000          | 95,008  |

Clear Grid

**To enter Joe's earnings, measured in today's dollars, we entered \$75,000 for 2003 in step 3, and grew his earnings at a zero rate in step 4.**

## Entering Joe's Self-Employment Earnings

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**Earnings**

1. Set Retirement Date

☒ Joe 1 / 1 / 2035 Age 65

☐ Sally 1 / 1 / 2040 Age 65

2. Select a year on the grid

3. Enter earnings for 2023 in today's dollars 0 Apply

4. Repeat step 2 or grow earnings in real terms from selected year at rate % 0 Grow

**Annual Self-Employment Earnings for Joe**

| Year | Age | Today's Dollars | Dollars |
|------|-----|-----------------|---------|
| 2014 | 44  | 25,000          | 34,606  |
| 2015 | 45  | 25,000          | 35,644  |
| 2016 | 46  | 25,000          | 36,713  |
| 2017 | 47  | 25,000          | 37,815  |
| 2018 | 48  | 25,000          | 38,949  |
| 2019 | 49  | 25,000          | 40,118  |
| 2020 | 50  | 0               | 0       |
| 2021 | 51  | 0               | 0       |
| 2022 | 52  | 0               | 0       |

Clear Grid

To enter Joe's consulting income, we selected the self-employment earnings tab. Then we entered \$25,000 for 2003, grew this amount at a zero rate, selected 2020, entered zero, and clicked *Grow*.

## Entering Sally's Earnings

**ESPlanner Plus 2.0**

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Families Show New Delete

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Folder List

- Earnings
- Special
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- Retirement Accounts
- Pensions & Annuities
- Primary Home
- Vacation Home
- Social Security
- Assumptions

**Earnings**

1. Set Retirement Date

Joe 1 / 1 / 2035 Age 65

Sally 1 / 1 / 2035 Age 60

2. Select a year on the grid

3. Enter earnings for 2009 in today's dollars 35000 Apply

4. Repeat step 2 or grow earnings in real terms from selected year at rate % 0 Grow

**Annual Employee Wages for Sally**

| Year | Age | Today's Dollars | Dollars |
|------|-----|-----------------|---------|
| 2005 | 30  | 37,132          | 39,393  |
| 2006 | 31  | 38,245          | 41,792  |
| 2007 | 32  | 39,393          | 44,337  |
| 2008 | 33  | 40,575          | 47,037  |
| 2009 | 34  | 41,792          | 49,902  |
| 2010 | 35  | 41,792          | 51,399  |
| 2011 | 36  | 41,792          | 52,941  |
| 2012 | 37  | 41,792          | 54,529  |
| 2013 | 38  | 41,792          | 56,165  |

Clear Grid

## Entering the Whitneys' Special Expenses

Joe and Sally want to send both of their children to their alma mater, NotforDummies U. The cost in 2003 of a NDU education was \$35,000, and worth every penny. Joe and Sally expect to pay that amount in today's dollars when their children reach age 19, which occurs in 2017 for Joe Jr. and 2024 for Sally Jr.

To enter these special expenses, we clicked *Special* on the *Folder List*. The program opened the *Special Expenditures* screen. We then typed in *College for Joe Jr.* in the field in step 1, selected 2017 for step 2, indicated in step 3 that the expense would continue for 4 years, specified in step 4 that the expense was in today's dollars, entered the amount, specified in step 5 that the expense was *Not Tax-Related*, and then clicked *Apply*. We then repeated these steps for Sally Junior's college tuition, except we specified that the expense would begin in 2024. The next screen shot shows the *Special Expenditures* screen after these inputs have been entered.

## Entering College Tuition for Joe Jr. and Sally Jr.

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**Folder List**

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**Special**

Special Expenditures Special Receipts Reserve Fund

1. Enter expense College for Sally

2. Choose starting year 2024

3. Continuing for 4 Years 2 times

4. Enter the amount 35000

☒ in today's dollars  
☐ in dollars

5. Choose  
☒ Not tax related  
☐ Tax deductible  
☐ Excludable from AGI

6. Click apply Apply

**Special Expenditures**

| Description       | Tax Status  | Year | Today's Dollars | Dollars |
|-------------------|-------------|------|-----------------|---------|
| College for Joe   | NonTaxRelat | 2017 | 35,000          | 52,941  |
| College for Joe   | NonTaxRelat | 2018 | 35,000          | 54,529  |
| College for Joe   | NonTaxRelat | 2019 | 35,000          | 56,165  |
| College for Joe   | NonTaxRelat | 2020 | 35,000          | 57,850  |
| College for Sally | NonTaxRelat | 2024 | 35,000          | 65,110  |
| College for Sally | NonTaxRelat | 2025 | 35,000          | 67,064  |
| College for Sally | NonTaxRelat | 2026 | 35,000          | 69,076  |
| College for Sally | NonTaxRelat | 2027 | 35,000          | 71,148  |

To enter these special expenditures, we typed in the expenditure name in step 1 and followed steps 2 through 6.

To remove an entry, select it and press Delete

Clear Grid Delete

## Entering Estate Plans and Current Life Insurance Holdings

We accessed the next two screens by clicking on *Estate Plans* in the Folder List. As the first of these screens indicates, we assumed that both Joe and Sally seek to spend \$5000 on their funerals and to leave \$20,000 in bequests regardless of when they die. The second screen shows that we assume that Joe currently holds a term life insurance policy with a face value of \$250,000. Sally also has a term policy provided by her employers. But its face value is only \$100,000. The actual current life insurance holdings are used by the program only to compare with the program's recommended life insurance holdings for the current year.

# Entering the Whitneys' Estate Plans

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Folder List

Earnings

Special

Estate

Assets & Saving

Retirement Accounts

Pensions & Annuities

Primary Home

Vacation Home

Social Security

Assumptions

Estate

Estate Planning

Life Insurance

Estate plans for Joe

Desired percentage change in survivors' living standard % 0

Special bequest in today's dollars 20000

Funeral expenses in today's dollars 5000

Estate plans for Sally

Desired percentage change in survivors' living standard % 0

Special bequest in today's dollars 20000

Funeral expenses in today's dollars 5000

## Entering the Whitneys' Current Life Insurance Holdings

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Folder List x

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- Assumptions

Estate

Estate Planning Life Insurance

1. Select ☐ Joe ☒ Sally

2. Enter policy name

3. Enter face value

4. Enter cash value

5. Click apply

**Private and Employer-provided Life Insurance**

| Name  | Policy Name     | Face Value | Cash Value |
|-------|-----------------|------------|------------|
| Sally | John Hancock    | 250,000    | 0          |
| Sally | Employer Policy | 100,000    | 0          |
| Joe   | Employer Policy | 250,000    | 0          |

To remove an item, select it and press Delete

|                  | Joe     | Sally   | Total   |
|------------------|---------|---------|---------|
| Total face value | 250,000 | 350,000 | 600,000 |
| Total cash value | 0       | 0       | 0       |
| Total term value | 250,000 | 350,000 | 600,000 |

## Entering Regular Assets

For the moment, we assume that the Whitney's have no retirement account assets – just regular assets. These comprise \$100,000 in savings and checking accounts and mutual funds. We entered these assets by clicking *Assets and Saving* in the folder list.

## Entering the Whitney's Regular Assets

**Folder List**

- ☒ Earnings
- ☒ Special
- ☒ Estate
- ☒ Assets & Saving
- ☒ Retirement Accounts
- ☒ Pensions & Annuities
- ☒ Primary Home
- ☒ Vacation Home
- ☒ Social Security
- ☒ Assumptions

**Assets and Saving**

Regular Assets | Current Saving

**In this screen, we entered the Whitney's regular (non-retirement account) assets.**

|                               |       |                                                     |         |
|-------------------------------|-------|-----------------------------------------------------|---------|
| Savings and checking accounts | 15000 | Bonds and CD's                                      | 0       |
| Money market accounts         | 0     | Other assets<br>(exclude homes and business assets) | 0       |
| Mutual funds                  | 85000 | Cash value of life insurance                        | 0       |
| Stocks                        | 0     | Total                                               | 100,000 |

## Entering the Whitneys' Actual Current Saving

*ESPlanner* recommends how much your family should save this year and in every future year. But to compare the program's recommended level of saving for the current year with what the family is actually saving, the program needs to solicit actual saving from the family. This is done on the second screen of the *Assets and Saving* folder. As indicated below, we assumed the Whitneys are contributing \$2,000 in the current year to a money market account. In addition, the real (inflation-adjusted) capital income they earn on their existing regular assets is \$3,000. Since we aren't specifying on the Saving screen that the Whitney's are withdrawing this capital income, it's building up in their saving and checking and mutual fund accounts and represents an additional form of saving.

The \$3,000 figure is calculated automatically as the amount of regular assets -- \$100,000 -- multiplied by the *real interest rate* -- the difference between the rate of return (which economists call the *nominal rate of*

interest) and the inflation rate, both of whose values are specified in the Assumptions folder. In this case, the rate of return on regular assets is assumed to equal 6 percent and the inflation rate is assumed to equal 3 percent. Hence the real interest rate is 3 percent. If we multiply .03 times \$100,000 we arrive at the \$3,000 in real asset income. Adding this amount of money that the Whitneys are indirectly saving to the \$2,000 they are directly saving produces their total actual saving for the current year of \$5,000.

## Entering the Whitneys' Actual Current Saving

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- ☒ Vacation Home
- ☒ Social Security
- ☒ Assumptions

**Assets and Saving**

Regular Assets Current Saving

Enter the amounts you'll save or dissave over the coming year in each category

|                                                                                        |              |
|----------------------------------------------------------------------------------------|--------------|
| Net contributions to saving, checking, money market, and other non-retirement accounts | 2000         |
| Net purchase of assets outside of retirement accounts, housing, and business assets    | 0            |
| Loan payments apart from mortgage payments and prepayment of mortgage principal        | 0            |
| Real asset income (dividends, interest, and other income earned on regular assets).... | 3,000        |
| Less amount of asset income not reinvested .....                                       | 0            |
| Less new borrowing apart from new mortgages .....                                      | 0            |
| <b>Equals current saving .....</b>                                                     | <b>5,000</b> |

## Entering Housing

Joe and Sally own a home, which we entered by clicking on *Primary Home* in the folder list. As the screen below indicates, we assumed that the couple have \$300,000 house, a \$200,000 20-year mortgage, a monthly mortgage payment of \$2,000, annual property taxes of \$3,000, a \$1,000 homeowners policy, and annual maintenance expenses of \$1,500. We also assumed that the market value of their house would stay even with inflation, so we left the real appreciation variable at its default value of zero. Finally, we assumed that the original purchase price of the home was \$250,000. Note that ESPlanner calculates capital gains on the sale of homes to the extent such gains exceed lifetime exemption levels.

## Entering Housing Data

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Primary Home

Current Home First Change of Home Second Change of Home

Primary Home - Rented

Monthly rent 0

Other monthly rental expense 0

Primary Home - Owned

Current market value 300000

Original purchase price 250000

Annual property taxes 3000

Annual homeowner's insurance 1000

Annual maintenance and condo fees 1500

Annual real appreciation rate % 0

To change status to rented, set Market Value to zero

Mortgages

Balance on loan 0

Monthly payment 0

Years remaining on loan 0

Add

| Balance | Monthly Pmt | Years |
|---------|-------------|-------|
| 200,000 | 2,000       | 20    |

Entering inputs on the housing screens is easy. There is one trick, however. You need to set the value of the home to zero to switch to renting and set monthly rent to zero to switch to owning.

## Entering Social Security Benefit Collection Dates and Covered Earnings

We have two more input folders to complete prior to computing our first case. The first is Social Security benefits, which we access by clicking the *Social Security* folder. This folder has three screens. The first solicits future Social Security benefit collection dates for those not collecting and for those already collecting benefits, it solicits the monthly benefit amount and the date benefits were first received. (We need this info to correctly calculate spousal survivor benefits.) As indicated below, we assume that both Joe and Sally begin receiving their Social Security benefits at age 65.

## Entering Joe's and Sally's Social Security Benefit Collection Dates

The next Social Security input screen asks about future Social Security-covered earnings. Since both Joe and Sally are in covered employment, we clicked the *Copy* button to copy their wage earnings into the relevant grids. Since self-employment earnings are automatically covered by Social Security, the program already knows to include Joe's self-employment earnings in assessing FICA taxes and determining Social Security covered earnings for purposes of determining Social Security benefits.

The last Social Security screen solicits past covered earnings, whether from employee wages or self-employment earnings. Here we simply entered values for both Joe and Sue.

## Entering Joe's and Sally's Future Covered Earnings

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Social Security has been copied for contingent planning as well

Folder List x

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- Special
- Estate
- Assets & Saving
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- Pensions & Annuities
- Primary Home
- Vacation Home
- Social Security
- Assumptions

Social Security

Benefit Collection Future Covered Earnings Past Covered Earnings

1. Choose

☒ Joe

☐ Sally

2. If all employee wages entered in earnings folder are covered by Social Security, click copy

Copy

3. Enter earnings for 2003 in today's dollars

0 Apply

And click on another year in the grid and enter earnings, or

4. Click another year in the grid and enter earnings or grow earnings in real terms at rate

% 0 Grow

Annual Employee Wages

| Year | Age | Today's Dollars | Dollars |
|------|-----|-----------------|---------|
| 2003 | 33  | 75,000          | 75,000  |
| 2004 | 34  | 75,000          | 77,250  |
| 2005 | 35  | 75,000          | 79,568  |
| 2006 | 36  | 75,000          | 81,955  |
| 2007 | 37  | 75,000          | 84,413  |
| 2008 | 38  | 75,000          | 86,946  |
| 2009 | 39  | 75,000          | 89,554  |
| 2010 | 40  | 75,000          | 92,241  |
| 2011 | 41  | 75,000          | 95,008  |
| 2012 | 42  | 75,000          | 97,858  |

To change the year, select that row

Clear Grid

Since Joe's and Sally's wage earnings are covered by Social Security, we entered their future covered wages simply by clicking *Copy*.

## Entering Joe's and Sally's Past Covered Earnings

**ESPlanner Plus 2.0**

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- ☒ Primary Home
- ☒ Vacation Home
- ☒ Social Security
- ☒ Assumptions

**Social Security**

Benefit Collection | Future Covered Earnings | Past Covered Earnings

Enter past Social Security covered earnings in actual dollars earned directly on the grid

| Year | Age | Dollars |
|------|-----|---------|
| 1992 | 22  | 30,000  |
| 1993 | 23  | 33,000  |
| 1994 | 24  | 33,000  |
| 1995 | 25  | 35,000  |
| 1996 | 26  | 35,500  |
| 1997 | 27  | 40,000  |
| 1998 | 28  | 42,000  |
| 1999 | 29  | 55,000  |
| 2000 | 30  | 60,000  |
| 2001 | 31  | 65,000  |
| 2002 | 32  | 70,000  |

| Year | Age | Dollars |
|------|-----|---------|
| 1997 | 22  | 22,000  |
| 1998 | 23  | 23,000  |
| 1999 | 24  | 30,000  |
| 2000 | 25  | 33,000  |
| 2001 | 26  | 34,000  |
| 2002 | 27  | 35,000  |

**We entered Joe's and Sally's past covered earnings by typing them directly into the two grids.**

Grow earnings from start year through last year by % 0 Grow

Grow earnings from start year through last year by % 0 Grow

## Entering Demographic, Economic, and Tax/Benefit Assumptions

The final set of inputs we need to consider prior to running the program are Joe's and Sally's demographic, economic, and tax/benefit assumptions. We set these assumptions by clicking *Assumptions* in the Folder List. The initial tab that appears is entitled *Economic Variables*. Here we accepted the default values for maximum ages of life, rates of return, inflation, maximum indebtedness, economies in shared living, etc.

Note that maximum age of life refers not to life expectancy, which is the average age at which a person will die, but rather the oldest age to which a person can possibly live. In contrast to many financial planning programs, which assume that people will die when they are expect to, *ESPlanner* realizes that people may live longer than they expect and that one needs to plan for that possibility. Consequently, in formulating its lifetime consumption smoothing, the program makes sure there are enough resources to maintain the household's living standard through the members' maximum ages of life.

The "Two can live as cheaply as" captures economies in shared living – the fact that lots of household consumption items, like heat, TVs, the fridge, can be shared. Our default value for this variable is 1.6. The minimum value for this variable is 1, in which case, adding an extra person is completely free in terms

of giving that person the same living standard. The maximum value is 2, in which case, there are no economies in shared living.

*Maximum indebtedness* indicates how much your family is willing and able to borrow to smooth its living standard. *Nominal rates of return* refer to the returns your family can expect to earn on its regular assets and retirement accounts before inflation. Note that when you activate Monte Carlo, these rates of return fields are grayed out because expected rates of return are determined automatically based on the current and future portfolios specified in the Monte Carlo input folder.

The remaining non-obvious variables included on this screen are the loads for life insurance and annuities. As you'll see shortly, *ESPlanner* not only recommends life insurance holdings to maintain the living standard of survivors, it indicates the insurance premium payments needed to purchase the recommended policies. The program's internal insurance premiums are based on TIAA rates, which may be higher or lower than those your family faces. If you feel the program is generating life insurance premiums that are too low (high), you can increase (reduce) the life insurance load factor on this screen above (below) the 15 percent default value. The same holds true of premiums for annuities your family wishes to purchase.

## Entering Economic Variables

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**Economic Assumptions**

Economic Variables Standard of Living Index Cost of Children Tax/Benefit Assumptions

**Maximum Age of Life**

Maximum age of life for Joe 95

Maximum age of life for Sally 95

**Nominal Rates of Return on**

Regular assets % 6

Joe's retirement accounts % 6

Sally's retirement accounts % 6

**Other**

Inflation rate Change % 3

Two can live as cheaply as 1.6

Transactions costs if selling homes % 6

Maximum indebtedness 0

Load charged on purchase of life insurance % 15

Load charged on purchase of annuities % 15

The next Assumptions input screen is called *Standard of Living Index*. This screen allows you to override the program's default assumption, namely that your family wants to have the same living standard each period. This default assumption is imposed by initially setting all values of the standard of living index to 100. The value of the index for the current year, in this case 2030, is set at 100 and can't be changed. By altering values of the index in years after the current year, you can tell the program how you want your family's living standard to change in future years *relative* to the current year.

In Joe's and Sally's case, we assumed the couple wishes to have a 10 percent higher living standard when Joe hits age 70 and Sally reaches age 65, which occurs in 2040. To tell the program this, we selected 2040, enter 110 in step 2, clicked apply, and then grew 110 at a growth rate of zero. This filled in values of 110 from 2040 onward and told the program to make the living standard 10 percent higher in each year after Sally retires than it was before she retires.

### Entering the Whitneys' Preferences about Changes in their Living Standard

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**Folder List** x

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- Estate
- Assets & Saving
- Retirement
- Accounts
- Pensions & Annuities
- Primary Home
- Vacation Home
- Social Security
- Assumptions

**Economic Assumptions**

Economic Variables **Standard of Living Index** Cost of Children Tax/Benefit Assumptions

**Standard of Living Index:**

1. Select a year by clicking on the grid, then proceed to step 2 or step 4
2. Enter index value
3. Click apply
4. Specify the growth rate
5. Click grow

**Living Standard for \*year\* is fixed at 100.**

| Year | Age | Age | Living Standard Index |
|------|-----|-----|-----------------------|
| 2033 | 63  | 58  | 100.0                 |
| 2034 | 64  | 59  | 100.0                 |
| 2035 | 65  | 60  | 100.0                 |
| 2036 | 66  | 61  | 100.0                 |
| 2037 | 67  | 62  | 100.0                 |
| 2038 | 68  | 63  | 100.0                 |
| 2039 | 69  | 64  | 100.0                 |
| 2040 | 70  | 65  | 110.0                 |
| 2041 | 71  | 66  | 110.0                 |
| 2042 | 72  | 67  | 110.0                 |
| 2043 | 73  | 68  | 110.0                 |
| 2044 | 74  | 69  | 110.0                 |
| 2045 | 75  | 70  | 110.0                 |
| 2046 | 76  | 71  | 110.0                 |

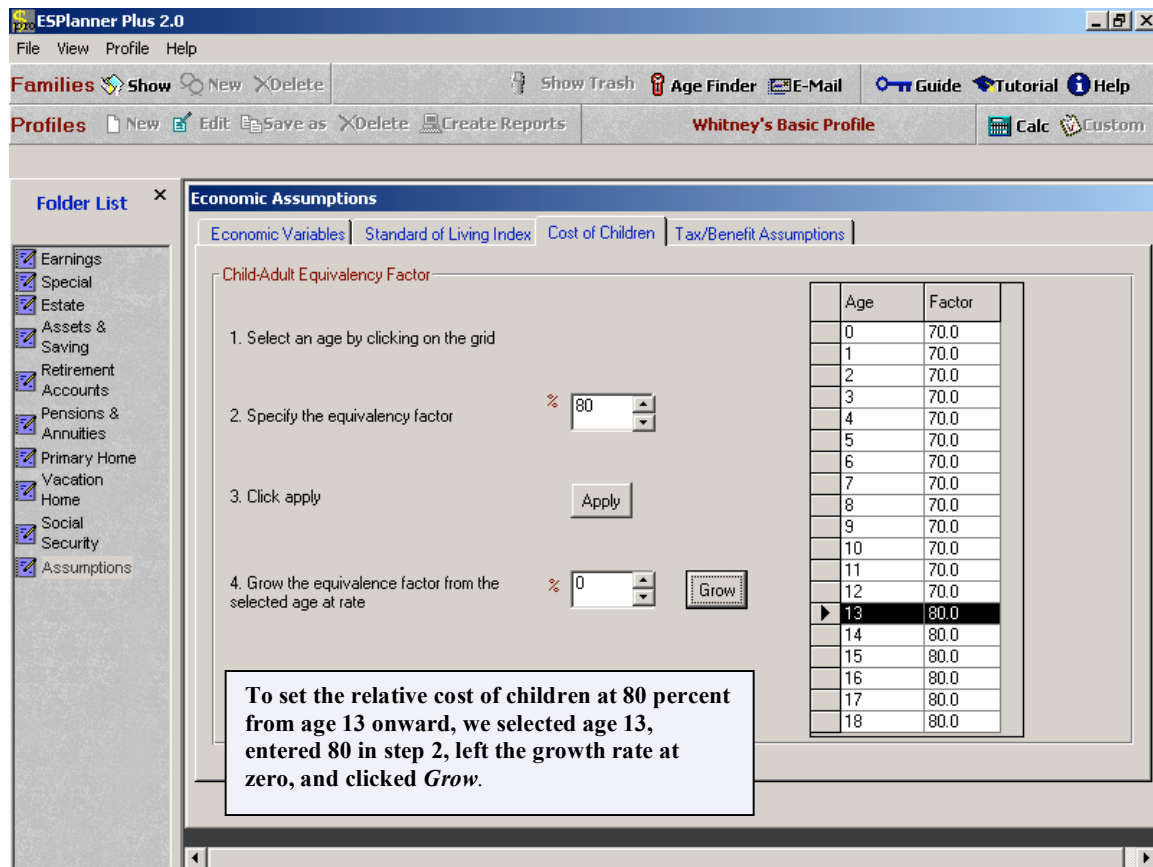
**To make the Whitneys' living standard 10 percent higher after 2039, we selected 2040, entered 110, and then grew 110 at a zero growth rate.**

Note that the program automatically adjusts its consumption recommendations to take into account how many mouths there are to feed in a given year in the household, the fact that two can live more cheaply than

one, and that children are not necessarily as expensive as adults with respect to generating a given living standard. Hence, don't use the standard of living index to try to adjust recommended consumption for changes over time in the household's composition. The program does that on its own by assuming that children leave the household at age 19, leaving fewer child mouths to feed, and that when a spouse or partner dies, there is one fewer adult mouth to feed.

The next Assumptions screen concerns the relative cost of children. The default assumption is that to provide a child with the same living standard as an adult requires only 70 percent of the consumption expenditure enjoyed by the adult. The program's default values are 70 percent, but we assumed that the Whitney's children have a relative cost of 80 percent once they hit age 13.

## Entering the Relative Cost of Children



**Economic Assumptions**

Economic Variables | Standard of Living Index | **Cost of Children** | Tax/Benefit Assumptions

**Child-Adult Equivalency Factor**

1. Select an age by clicking on the grid

2. Specify the equivalency factor % 80

3. Click apply Apply

4. Grow the equivalence factor from the selected age at rate % 0 Grow

| Age | Factor |
|-----|--------|
| 0   | 70.0   |
| 1   | 70.0   |
| 2   | 70.0   |
| 3   | 70.0   |
| 4   | 70.0   |
| 5   | 70.0   |
| 6   | 70.0   |
| 7   | 70.0   |
| 8   | 70.0   |
| 9   | 70.0   |
| 10  | 70.0   |
| 11  | 70.0   |
| 12  | 70.0   |
| 13  | 80.0   |
| 14  | 80.0   |
| 15  | 80.0   |
| 16  | 80.0   |
| 17  | 80.0   |
| 18  | 80.0   |

**To set the relative cost of children at 80 percent from age 13 onward, we selected age 13, entered 80 in step 2, left the growth rate at zero, and clicked Grow.**

The final Assumptions screen is *Tax/Benefit Assumptions*. This screen permits you to specify future changes in Social Security benefits, federal income taxes, state income taxes, and payroll taxes. It also lets you input the share of regular capital income (capital income not earned in retirement accounts) that your family is likely to receive in the form of capital gains or dividends, which are taxed at a lower rate than other capital income. Finally, it allows you to enter unrealized capital gains on financial assets. The

program assumes that such gains are realized smoothly through time. This is a fairly conservative assumption.

For this case, we assumed a 20 percent cut in Social Security benefits starting in 2015, and 15 percent increases in federal income taxes and payroll taxes, also starting in 2015. We also specified that a quarter of capital income comes in the form of capital gains or dividends.

## Entering Tax/Benefit Assumptions

The screenshot shows the ESPlanner Plus 2.0 interface. The 'Economic Assumptions' window is open, with the 'Tax/Benefit Assumptions' tab selected. The 'Folder List' on the left includes Earnings, Special, Estate, Assets & Saving, Retirement Accounts, Pensions & Annuities, Primary Home, Vacation Home, Social Security, and Assumptions. The main window contains the following sections:

- Predictions:**
  - Will Social Security benefits be Changed? Yes ☒
    - Year change occurs: 2015
    - Percentage change in benefits %: -20
  - Will Federal Income Taxes be Changed? Yes ☒
    - Year change occurs: 2015
    - Percentage change in taxes %: 15
  - Will Payroll (FICA) taxes be Changed? Yes ☒
    - Year change occurs: 2015
    - Percentage change in taxes (negative or positive changes allowed) %: 15
- Predictions (Continued):**
  - Will State Income Taxes be Changed? Yes ☐
    - Year change occurs: 2003
    - Percentage change in taxes %: 0
- Dividends and Capital Gains:**
  - Share of regular capital income received in the form of long-term capital gains or dividends %: 25
  - Unrealized capital gains/losses on existing financial assets: 0

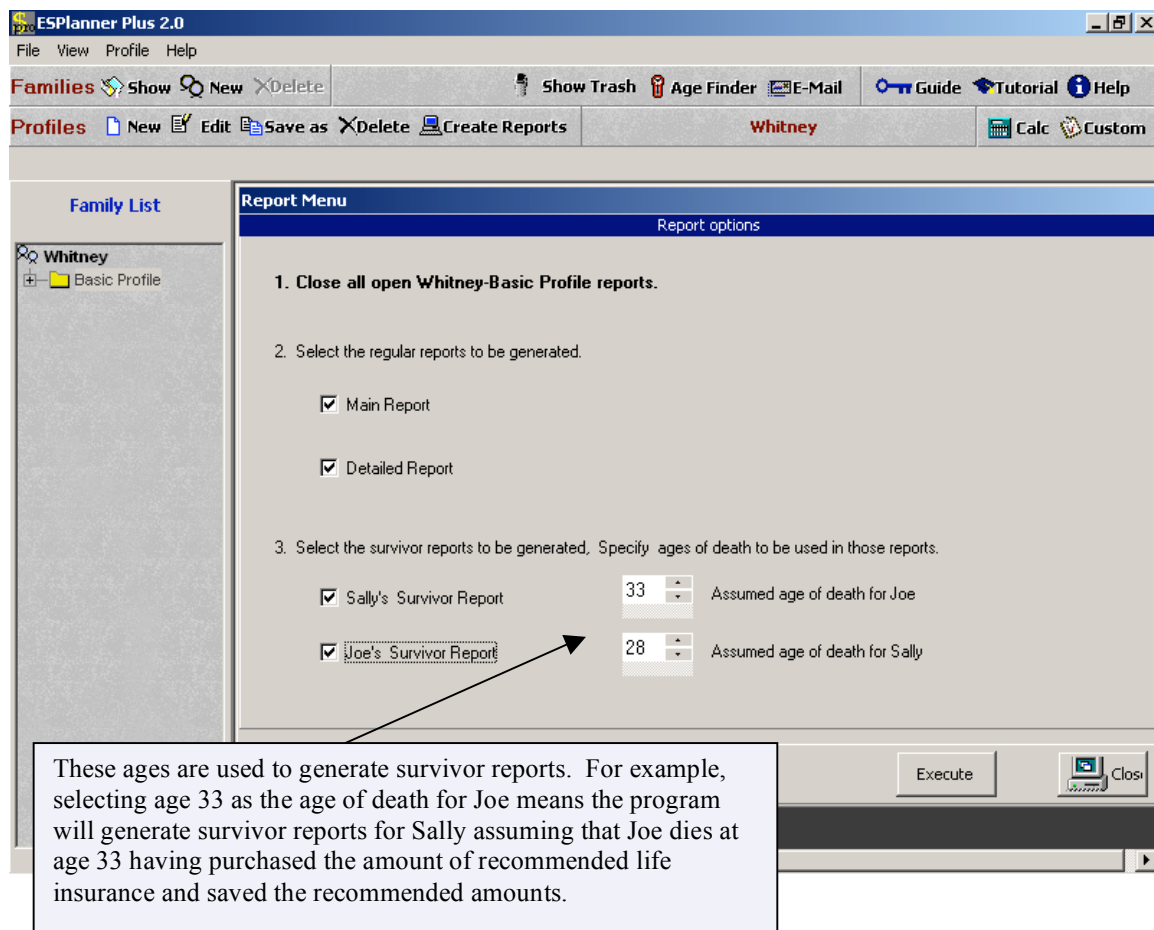
## Calculating the Whitneys' Plan

To process the Whitney's plan click *Show* on the Family List, click on the Whitney's input file that you wish to process, which in this case is called *Basic Plan*, and then click *Create Reports* on the Profiles Tool Bar.

The Report Menu will display permitting you to specify the particular reports you'd like to run. The *Main Reports* is always generated. But you have the option of also selecting *Detailed Reports*, which provides supplementary information about the Main Report, and, in the case of married or partnered families, *Survivor Reports*, which show how a spouse or partner will fare if his/her counterpart dies at the age you specify on the Report Selection screen. All of these reports appear in Excel files. The reports are generated one at a time (so please be patient). They will appear at the bottom of your screen as files that you can open. The Main Report will be displayed. If Monte Carlo is activated, the Report Menu also gives you the option to generate Monte Carlo reports.

Once you have selected the reports you wish to generate, make sure you've closed any open excel reports previously generated for this input file and then click *Execute*.

### Selecting Reports for *ESPlanner* to Generate



### **The Whitney's Current-Year Recommendations**

The first worksheet you'll see in the Main Reports provides a set of charts that summarize the program's recommendations. Subsequent worksheets present the results in tabular form. The Current Recommendations report, copied below, is an example. It shows how much the Whitney's should save, consume, and insure in the current year. As indicated in the screen shot presented below, the Whitneys are consuming too much. The program recommends they spend \$50,120 on consumption and save \$19,837 in the current year. Given the couple's actual current consumption and saving, the program recommends they reduce their consumption expenditures by \$15,142 and spend \$306 more on life insurance premiums. The net recommended reduction in expenditures is thus \$14,837, which, up to a dollar, is the program's recommended increase in saving.

How does the program determine that the amount the Whitneys are currently consuming is \$65,262? It does so by starting with the Whitneys' total current income and subtracting all its non-consumption expenditures, including its actual current saving. To be precise, the program subtracts from total current income the sum of actual saving, any current special expenditures, current contributions to the reserve fund, current housing expenditures, current actual life insurance premium payments, current non-employer contributions to retirement accounts, and current taxes.

The program also indicates that Joe's life is underinsured to the tune of \$484,264 and that Sally's life is over insured by \$100,000. The additional life insurance on Joe's life is needed, in the event Joe dies in the current year, to maintain Sally's living standard and that of the children at the same level through time as they would otherwise have enjoyed. The program recommends no life insurance on Sally's life because were Sally to die with no life insurance, Joe and the children would enjoy a *higher* living standard than would otherwise be the case.

## The Whitney's Current-Year Recommendations

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### The Whitneys' Annual Recommendations

The second screen in the Main Reports shows the program's annual recommendations as well as the couple's living standard per adult. All amounts for future years in this and other reports are presented in *today's dollars*, meaning in the dollars of the current year. Let's look first at the annual consumption recommendations. In considering them, bear in mind that consumption refers to all expenditures apart from housing expenses, special expenditures, bequests and funeral expenses, taxes, life insurance premium payments, and individual contributions to retirement accounts.

In the first screen shot presented below, recommended consumption is, as indicated, initially \$50,120. This value rises to \$58,600 in 2005 when the Whitneys' second child, Sally Jr., is born. It remains at this level until 2011, when Joe Jr. reaches age 13, which is the age, according to the assumptions we made in our Cost of Children screen, that children become more expensive. In 2011, recommended consumption is \$59,763. Recommended consumption remains at \$59,763 until 2017 when Joe Jr. reaches age 19, leaves the household, and leaves fewer mouths to feed. At this point, recommended consumption drops to \$50,120 again. It stays at this value until the next year, when Sally Jr. reaches age 13 and becomes more expensive. At this point, recommended consumption is \$51,371.

As the second next screen shot shows, recommended consumption drops again in 2024 when Sally Jr. leaves home. It remains at the 2024 value of \$40,892 until 2040, when Joe reaches age 70. Recall that we used the Standard of Living Index to tell the program to raise the household's living standard by 10 percent starting in 2040. In that year recommended consumption is \$44,981, which is precisely 10 percent higher than \$40,892. The \$44,981 recommendation is maintained through 2065, the year Joe, assuming he survives until then, reaches 95 -- his maximum age of life. From 2066 through 2070, Sally's last possible year of life, recommended consumption is \$28,113. Note that \$44,981 is 1.6 times larger than \$28,113. This is consistent with our assumption in the Assumptions folder that two can live as cheaply as 1.6.

(There is one other reason recommended consumption can change, which we'll discuss in more detail below. That's when the household is unable to have the same living standard when young as when old without going into debt or going deeper into debt than the household is willing to accept.)

In regarding the program's recommended changes over time in consumption expenditure, it's important to bear in mind that individual household members enjoy the same living standard year in and year out prior to 2040 and a 10 percent higher living standard after 2040. Stated differently, the program adjusts consumption recommendations in accordance with changes over time in the household's demographic composition, the relative cost of children, economies in shared living, and standard of living preferences.<sup>1</sup> But each of these adjustments, except those involving desired future changes in living standard, are made in order to preserve the living standards of individual household members.

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<sup>1</sup> If  $C$  stands for a household's total recommended consumption expenditure and  $S$  stands for the living standard per adult, the formula relating the two variables is given by  $T = S \times M^e$ , where  $M$  stands for the the number of adults plus the sum of each child's cost weight. If, for example, a family has two adults and two children and the equivalent cost of supporting the younger child is 70 percent of an adult and the cost of supporting the older child is 80 percent of an adult, the cost weights are .7 and .8, and the value for  $M$  is  $2 + 1.5 = 3.5$ . The exponent  $e$  equals the natural log of  $z$  divided by the natural log of 2, where  $x$  is the value of the economies of shared living entered in the Assumptions folder. In the current example, we assume that 2 can live as cheaply as 1.6, so  $z$  equals 1.6.

## Annual Recommendations for the Whitneys

Microsoft Excel - Whitney\_Basic\_Profile\_Main\_report2461

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This can be verified by examining the last column in this table. It shows the living standard per adult, which is calculated as the amount of consumption expenditure that a single adult living by herself/himself would need to make to achieve the living standard enjoyed by the household members in the year in question. As the screen shots show, this figure is a constant \$25,557 until 2040, when it rises by 10 percent to \$28,113, which, while it's not shown, is precisely what Sally is told to consume after Joe passes away. Stated differently, the variations over time in recommended total consumption expenditure are precisely those needed to maintain the Whitney's living standard at the same level year after year until it rises by the desired 10 percent when Joe hits age 70.

The annual recommendations screen also indicates how much the Whitneys should save each year. Note that between 2017 and 2020 and between 2024 and 2027, when Joe Jr. and Sally Jr. are, respectively, in college, recommended saving is negative. (The values are in red and in parentheses.) The reason is that in those years the Whitneys are spending some of their accumulated assets to cover the tuition costs.

This is a major advantage of *ESPlanner* compared with its competition. *ESPlanner* recommends that households spend when they need to and save when they can. In contrast, conventional software sets saving on autopilot, with the household directed to save either exactly the same amount each year or

exactly the same percentage of income. Now consumption equals income net of off-the-top expenditures minus saving. So if annual saving is on autopilot, fluctuations from year to year in income or off-the-top expenditures require fluctuations in consumption. This, in turn, means fluctuating living standards over the life cycle, which is the exact opposite of what households are trying to achieve.

Finally, the annual term insurance recommendations indicate how much the Whitneys should purchase in life insurance coverage in the current year and in each future year. The program recommends no life insurance on Sally's life because Joe and the children would be able to afford a higher living standard were Sally to pass away. For Joe, the program recommends \$713,483 in life insurance initially. Joe's recommended life insurance holdings decline through time until he reaches age 60, after which recommended life insurance for Joe is also zero.

How can one tell whether these life insurance recommendations are correct? The answer is easy. The survivor reports, to which we will turn shortly, indicate that the recommended life insurance holdings are, to the dollar, the amounts needed to ensure the same living standard through time as they'd enjoy were their spouse/partner to live to his/her maximum age of live.

### Annual Recommendations for the Whitneys Continued

| Microsoft Excel - Whitney_Basic Profile_Main_report2461 |      |           |             |                        |          |                      |                        |                           |            |   |
|---------------------------------------------------------|------|-----------|-------------|------------------------|----------|----------------------|------------------------|---------------------------|------------|---|
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| K21                                                     |      |           |             |                        |          |                      |                        |                           |            |   |
|                                                         | A    | B         | C           | Annual Recommendations |          |                      |                        | H                         | I          | J |
| 1                                                       | Year | Joe's Age | Sally's Age | Consumption            | Saving   | Joe's Life Insurance | Sally's Life Insurance | Living Standard Per Adult |            |   |
| 2                                                       |      |           |             |                        |          |                      |                        |                           |            |   |
| 22                                                      | 2022 | 52        | 47          | 51,371                 | 8,064    | 242,268              | 0                      | 25,557                    | L<br>Marri |   |
| 23                                                      | 2023 | 53        | 48          | 51,371                 | 21,241   | 226,215              | 0                      | 25,557                    |            |   |
| 24                                                      | 2024 | 54        | 49          | 40,892                 | (4,118)  | 196,227              | 0                      | 25,557                    |            |   |
| 25                                                      | 2025 | 55        | 50          | 40,892                 | (4,037)  | 163,103              | 0                      | 25,557                    |            |   |
| 26                                                      | 2026 | 56        | 51          | 40,892                 | (3,929)  | 129,511              | 0                      | 25,557                    |            |   |
| 27                                                      | 2027 | 57        | 52          | 40,892                 | (3,790)  | 95,410               | 0                      | 25,557                    |            |   |
| 28                                                      | 2028 | 58        | 53          | 40,892                 | 31,360   | 64,576               | 0                      | 25,557                    |            |   |
| 29                                                      | 2029 | 59        | 54          | 40,892                 | 31,777   | 33,540               | 0                      | 25,557                    |            |   |
| 30                                                      | 2030 | 60        | 55          | 40,892                 | 32,248   | 2,128                | 0                      | 25,557                    |            |   |
| 31                                                      | 2031 | 61        | 56          | 40,892                 | 32,472   | 0                    | 0                      | 25,557                    |            |   |
| 32                                                      | 2032 | 62        | 57          | 40,892                 | 32,675   | 0                    | 0                      | 25,557                    |            |   |
| 33                                                      | 2033 | 63        | 58          | 40,892                 | 32,879   | 0                    | 0                      | 25,557                    |            |   |
| 34                                                      | 2034 | 64        | 59          | 40,892                 | 33,085   | 0                    | 0                      | 25,557                    |            |   |
| 35                                                      | 2035 | 65        | 60          | 40,892                 | (18,093) | 0                    | 0                      | 25,557                    |            |   |
| 36                                                      | 2036 | 66        | 61          | 40,892                 | (18,367) | 0                    | 0                      | 25,557                    |            |   |
| 37                                                      | 2037 | 67        | 62          | 40,892                 | (18,639) | 0                    | 0                      | 25,557                    |            |   |
| 38                                                      | 2038 | 68        | 63          | 40,892                 | (18,919) | 0                    | 0                      | 25,557                    |            |   |
| 39                                                      | 2039 | 69        | 64          | 40,892                 | (19,208) | 0                    | 0                      | 25,557                    |            |   |
| 40                                                      | 2040 | 70        | 65          | 44,981                 | (11,084) | 0                    | 0                      | 28,113                    |            |   |

### ***The Whitneys' Spending Report***

Next, let's examine the *Spending* Report, provided in another worksheet in the Main Reports. The spending report shows not only the annual recommended level of consumption expenditures, but also how much the Whitneys will pay for housing, special expenditures, excess bequests and funerals, insurance premiums, and retirement account contributions. Housing expenditures decline in the report as inflation erodes the real value of mortgage payments. In 2023, the mortgage is paid off and housing expenditures drop to \$5,500 per year. The column labeled "special expenditures" shows the children's college expenses occurring in the correct years.

*ESPlanner* is designed to use your family's home equity to cover any bequests and funeral expenses of the *last* household member to pass away. That's why the bequest and funeral expense column is labeled "excess" bequests and funeral expenses. It's the bequest and funeral expenses above and beyond the amount that can be covered by available home equity. The insurance premiums are those associated with purchasing recommended levels of life insurance coverage for Joe. And the retirement account contributions, which in the Whitney's case are zero, are those made by your family, not your family's employers. (Note that employer contributions to your family members' retirement accounts are fully included in calculating retirement account withdrawals.)

### **The Whitneys' Total Spending Report**

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|    | A    | B         | C           | Total Spending |                      |                                   |                      |                                        |                                          |                              |                         |                |  |
|----|------|-----------|-------------|----------------|----------------------|-----------------------------------|----------------------|----------------------------------------|------------------------------------------|------------------------------|-------------------------|----------------|--|
| 1  | Year | Joe's Age | Sally's Age |                |                      |                                   |                      |                                        |                                          |                              |                         |                |  |
| 2  |      |           |             | Consumption    | Special Expenditures | Net Contributions to Reserve Fund | Housing Expenditures | Joe's Retirement Account Contributions | Sally's Retirement Account Contributions | Excess Funerals and Bequests | Life Insurance Premiums | Total Spending |  |
| 3  | 2003 | 33        | 28          | 50,120         | 0                    | 0                                 | 28,801               | 0                                      | 0                                        | 0                            | 563                     | 79,484         |  |
| 4  | 2004 | 34        | 29          | 50,120         | 0                    | 0                                 | 28,122               | 0                                      | 0                                        | 0                            | 571                     | 78,813         |  |
| 5  | 2005 | 35        | 30          | 58,600         | 0                    | 0                                 | 27,463               | 0                                      | 0                                        | 0                            | 604                     | 86,667         |  |
| 6  | 2006 | 36        | 31          | 58,600         | 0                    | 0                                 | 26,824               | 0                                      | 0                                        | 0                            | 633                     | 86,057         |  |
| 7  | 2007 | 37        | 32          | 58,600         | 0                    | 0                                 | 26,203               | 0                                      | 0                                        | 0                            | 663                     | 85,472         |  |
| 8  | 2008 | 38        | 33          | 58,600         | 0                    | 0                                 | 25,600               | 0                                      | 0                                        | 0                            | 712                     | 84,912         |  |
| 9  | 2009 | 39        | 34          | 58,600         | 0                    | 0                                 | 25,014               | 0                                      | 0                                        | 0                            | 759                     | 84,373         |  |
| 10 | 2010 | 40        | 35          | 58,600         | 0                    | 0                                 | 24,446               | 0                                      | 0                                        | 0                            | 810                     | 83,856         |  |
| 11 | 2011 | 41        | 36          | 53,763         | 0                    | 0                                 | 23,834               | 0                                      | 0                                        | 0                            | 863                     | 84,520         |  |
| 12 | 2012 | 42        | 37          | 53,763         | 0                    | 0                                 | 23,358               | 0                                      | 0                                        | 0                            | 915                     | 84,036         |  |
| 13 | 2013 | 43        | 38          | 53,763         | 0                    | 0                                 | 22,838               | 0                                      | 0                                        | 0                            | 968                     | 83,563         |  |
| 14 | 2014 | 44        | 39          | 53,763         | 0                    | 0                                 | 22,333               | 0                                      | 0                                        | 0                            | 1,021                   | 83,117         |  |
| 15 | 2015 | 45        | 40          | 53,763         | 0                    | 0                                 | 21,843               | 0                                      | 0                                        | 0                            | 1,057                   | 82,663         |  |
| 16 | 2016 | 46        | 41          | 53,763         | 0                    | 0                                 | 21,367               | 0                                      | 0                                        | 0                            | 1,088                   | 82,218         |  |
| 17 | 2017 | 47        | 42          | 50,120         | 35,000               | 0                                 | 20,305               | 0                                      | 0                                        | 0                            | 1,101                   | 107,126        |  |
| 18 | 2018 | 48        | 43          | 51,371         | 35,000               | 0                                 | 20,456               | 0                                      | 0                                        | 0                            | 1,105                   | 107,332        |  |
| 19 | 2019 | 49        | 44          | 51,371         | 35,000               | 0                                 | 20,020               | 0                                      | 0                                        | 0                            | 1,100                   | 107,431        |  |
| 20 | 2020 | 50        | 45          | 51,371         | 35,000               | 0                                 | 19,597               | 0                                      | 0                                        | 0                            | 1,131                   | 107,039        |  |
| 21 | 2021 | 51        | 46          | 51,371         | 0                    | 0                                 | 19,187               | 0                                      | 0                                        | 0                            | 1,160                   | 71,718         |  |
| 22 | 2022 | 52        | 47          | 51,371         | 0                    | 0                                 | 18,788               | 0                                      | 0                                        | 0                            | 1,175                   | 71,334         |  |
| 23 | 2023 | 53        | 48          | 51,371         | 0                    | 0                                 | 5,500                | 0                                      | 0                                        | 0                            | 1,183                   | 58,054         |  |
| 24 | 2024 | 54        | 49          | 40,832         | 35,000               | 0                                 | 5,500                | 0                                      | 0                                        | 0                            | 1,107                   | 82,439         |  |
| 25 | 2025 | 55        | 50          | 40,832         | 35,000               | 0                                 | 5,500                | 0                                      | 0                                        | 0                            | 935                     | 82,387         |  |
| 26 | 2026 | 56        | 51          | 40,832         | 35,000               | 0                                 | 5,500                | 0                                      | 0                                        | 0                            | 858                     | 82,250         |  |
| 27 | 2027 | 57        | 52          | 40,832         | 35,000               | 0                                 | 5,500                | 0                                      | 0                                        | 0                            | 689                     | 82,081         |  |
| 28 | 58   | 53        | 40,832      | 0              | 0                    | 5,500                             | 0                    | 0                                      | 0                                        | 511                          | 46,303                  |                |  |

AnnualRecommendationsRegularAssetsTotalIncomeTotalSpendingNetWor

Ready

The last column in the spending report shows total spending in each year. The key question with respect to this column of numbers is whether this recommended spending path is actually affordable. The answer, as we'll now see, is yes.

### The Whitney's Regular Assets Report

Were the time-path of spending shown in the Spending Report not affordable, the household would end up in debt in the last period of the household's possible existence. As the Whitney's *Regular Asset Report*, parts of which are copied below, indicates, this doesn't happen. The program makes sure the Whitneys "die broke." This means that they spend all their resources (apart from housing equity not used to cover Sally's final bequest and funeral expenses), but they don't leave any bills unpaid.

The first of the Regular Assets screen shots shown below shows that the couple spends down its assets to send the two kids to college. The second screen shot shows that the couple dies broke; i.e., regular assets in 2070 when Sally reaches age 95 equal zero. The Regular Assets Report is a balance sheet. The annual change in regular assets equals that year's saving. And saving equals income minus the sum of total spending plus taxes.

## The Whitneys' Regular Assets

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## The Whitneys' Regular Assets Continued

| Microsoft Excel - Whitney_Basic Profile_Main_report2461 |      |           |             |                |                |       |          |                |   |   |
|---------------------------------------------------------|------|-----------|-------------|----------------|----------------|-------|----------|----------------|---|---|
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| AD89                                                    |      |           |             |                |                |       |          |                |   |   |
|                                                         | A    | B         | C           | D              | E              | F     | G        | H              | I | J |
| 1                                                       | Year | Joe's Age | Sally's Age | Regular Assets |                |       |          |                |   |   |
| 2                                                       |      |           |             | Total Income   | Total Spending | Taxes | Saving   | Regular Assets |   |   |
| 52                                                      | 2052 | 82        | 77          | 41,590         | 50,481         | 3,891 | (12,783) | 273,186        |   |   |
| 53                                                      | 2053 | 83        | 78          | 41,217         | 50,481         | 3,673 | (12,936) | 260,250        |   |   |
| 54                                                      | 2054 | 84        | 79          | 40,841         | 50,481         | 3,456 | (13,096) | 247,154        |   |   |
| 55                                                      | 2055 | 85        | 80          | 40,459         | 50,481         | 3,236 | (13,257) | 233,896        |   |   |
| 56                                                      | 2056 | 86        | 81          | 40,073         | 50,481         | 3,014 | (13,422) | 220,474        |   |   |
| 57                                                      | 2057 | 87        | 82          | 39,682         | 50,481         | 2,792 | (13,591) | 206,883        |   |   |
| 58                                                      | 2058 | 88        | 83          | 39,286         | 50,481         | 2,566 | (13,761) | 193,122        |   |   |
| 59                                                      | 2059 | 89        | 84          | 38,885         | 50,481         | 2,336 | (13,932) | 179,191        |   |   |
| 60                                                      | 2060 | 90        | 85          | 38,480         | 50,481         | 2,104 | (14,105) | 165,086        |   |   |
| 61                                                      | 2061 | 91        | 86          | 38,069         | 50,481         | 1,872 | (14,284) | 150,801        |   |   |
| 62                                                      | 2062 | 92        | 87          | 37,653         | 50,481         | 1,637 | (14,465) | 136,336        |   |   |
| 63                                                      | 2063 | 93        | 88          | 37,232         | 50,481         | 1,398 | (14,647) | 121,689        |   |   |
| 64                                                      | 2064 | 94        | 89          | 36,805         | 50,481         | 1,154 | (14,830) | 106,858        |   |   |
| 65                                                      | 2065 | 95        | 90          | 36,373         | 75,481         | 909   | (40,017) | 66,841         |   |   |
| 66                                                      | 2066 |           | 91          | 21,368         | 33,613         | 1,108 | (13,353) | 53,488         |   |   |
| 67                                                      | 2067 |           | 92          | 20,979         | 33,613         | 583   | (13,217) | 40,271         |   |   |
| 68                                                      | 2068 |           | 93          | 20,594         | 33,613         | 61    | (13,080) | 27,191         |   |   |
| 69                                                      | 2069 |           | 94          | 20,213         | 33,613         | 0     | (13,400) | 13,791         |   |   |
| 70                                                      | 2070 |           | 95          | 19,822         | 33,613         | 0     | (13,791) | 0              |   |   |

### The Whitneys' Total Income Report

The next report in Main Reports that we want to show you is the *Total Income Report*. This report decomposes the household's total income into four components – non-asset income, special receipts, retirement account withdrawals and annuities, and income from the household's regular assets. *Non-asset income* consists of labor earnings, social security benefits, pension benefits, and regular annuities (annuities that aren't derived from retirement accounts).

### The Whitney's Net Worth Report

The remaining report in Main Reports shows the Whitney's' total net worth each year, breaking total net worth into components. These components are regular assets, retirement account balances, home equity, and the value of the couple's reserve fund.

## The Whitneys' Total Income Report

| Total Income |           |             |                        |                          |                  |                                        |                                          |                      |              |  |
|--------------|-----------|-------------|------------------------|--------------------------|------------------|----------------------------------------|------------------------------------------|----------------------|--------------|--|
| Year         | Joe's Age | Sally's Age | Joe's Non-Asset Income | Sally's Non-Asset Income | Special Receipts | Joe's Retirement Account Withdrawals & | Sally's Retirement Account Withdrawals & | Regular Asset Income | Total Income |  |
| 2003         | 33        | 28          | 100,000                | 35,000                   | 0                | 0                                      | 0                                        | 3,000                | 138,000      |  |
| 2004         | 34        | 29          | 100,000                | 36,050                   | 0                | 0                                      | 0                                        | 3,578                | 139,628      |  |
| 2005         | 35        | 30          | 100,000                | 37,132                   | 0                | 0                                      | 0                                        | 4,194                | 141,326      |  |
| 2006         | 36        | 31          | 100,000                | 38,245                   | 0                | 0                                      | 0                                        | 4,597                | 142,842      |  |
| 2007         | 37        | 32          | 100,000                | 39,393                   | 0                | 0                                      | 0                                        | 5,035                | 144,428      |  |
| 2008         | 38        | 33          | 100,000                | 40,575                   | 0                | 0                                      | 0                                        | 5,508                | 146,083      |  |
| 2009         | 39        | 34          | 100,000                | 41,792                   | 0                | 0                                      | 0                                        | 6,015                | 147,807      |  |
| 2010         | 40        | 35          | 100,000                | 41,792                   | 0                | 0                                      | 0                                        | 6,553                | 148,345      |  |
| 2011         | 41        | 36          | 100,000                | 41,792                   | 0                | 0                                      | 0                                        | 7,104                | 148,896      |  |
| 2012         | 42        | 37          | 100,000                | 41,792                   | 0                | 0                                      | 0                                        | 7,632                | 149,424      |  |
| 2013         | 43        | 38          | 100,000                | 41,792                   | 0                | 0                                      | 0                                        | 8,168                | 149,960      |  |
| 2014         | 44        | 39          | 100,000                | 41,792                   | 0                | 0                                      | 0                                        | 8,712                | 150,504      |  |
| 2015         | 45        | 40          | 100,000                | 41,792                   | 0                | 0                                      | 0                                        | 9,262                | 151,054      |  |
| 2016         | 46        | 41          | 100,000                | 41,792                   | 0                | 0                                      | 0                                        | 9,638                | 151,430      |  |
| 2017         | 47        | 42          | 100,000                | 41,792                   | 0                | 0                                      | 0                                        | 10,014               | 151,806      |  |
| 2018         | 48        | 43          | 100,000                | 41,792                   | 0                | 0                                      | 0                                        | 9,618                | 151,410      |  |
| 2019         | 49        | 44          | 100,000                | 41,792                   | 0                | 0                                      | 0                                        | 9,179                | 150,971      |  |
| 2020         | 50        | 45          | 75,000                 | 41,792                   | 0                | 0                                      | 0                                        | 8,729                | 125,521      |  |
| 2021         | 51        | 46          | 75,000                 | 41,792                   | 0                | 0                                      | 0                                        | 7,949                | 124,741      |  |

## The Whitneys' Net Worth

Microsoft Excel - Whitney\_Basic Profile\_Main\_report2461

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|    | A    | B         | C           | Net Worth      |                |              |                           |                             |           |  |
|----|------|-----------|-------------|----------------|----------------|--------------|---------------------------|-----------------------------|-----------|--|
|    | Year | Joe's Age | Sally's Age | Regular Assets | Housing Equity | Reserve Fund | Joe's Retirement Accounts | Sally's Retirement Accounts | Net Worth |  |
| 1  |      |           |             |                |                |              |                           |                             |           |  |
| 2  |      |           |             |                |                |              |                           |                             |           |  |
| 3  | 2003 | 33        | 28          | 122,837        | 109,096        | 0            | 0                         | 0                           | 231,932   |  |
| 4  | 2004 | 34        | 29          | 143,978        | 118,159        | 0            | 0                         | 0                           | 262,137   |  |
| 5  | 2005 | 35        | 30          | 157,816        | 127,207        | 0            | 0                         | 0                           | 285,023   |  |
| 6  | 2006 | 36        | 31          | 172,874        | 136,258        | 0            | 0                         | 0                           | 309,133   |  |
| 7  | 2007 | 37        | 32          | 189,114        | 145,331        | 0            | 0                         | 0                           | 334,445   |  |
| 8  | 2008 | 38        | 33          | 206,500        | 154,445        | 0            | 0                         | 0                           | 360,946   |  |
| 9  | 2009 | 39        | 34          | 224,991        | 163,621        | 0            | 0                         | 0                           | 388,613   |  |
| 10 | 2010 | 40        | 35          | 243,914        | 172,881        | 0            | 0                         | 0                           | 416,795   |  |
| 11 | 2011 | 41        | 36          | 262,036        | 182,246        | 0            | 0                         | 0                           | 444,282   |  |
| 12 | 2012 | 42        | 37          | 280,431        | 191,741        | 0            | 0                         | 0                           | 472,172   |  |
| 13 | 2013 | 43        | 38          | 299,112        | 201,390        | 0            | 0                         | 0                           | 500,501   |  |
| 14 | 2014 | 44        | 39          | 317,994        | 211,219        | 0            | 0                         | 0                           | 529,213   |  |
| 15 | 2015 | 45        | 40          | 330,904        | 221,256        | 0            | 0                         | 0                           | 552,160   |  |
| 16 | 2016 | 46        | 41          | 343,798        | 231,530        | 0            | 0                         | 0                           | 575,328   |  |
| 17 | 2017 | 47        | 42          | 330,229        | 242,072        | 0            | 0                         | 0                           | 572,301   |  |
| 18 | 2018 | 48        | 43          | 315,131        | 252,914        | 0            | 0                         | 0                           | 568,045   |  |
| 19 | 2019 | 49        | 44          | 299,686        | 264,090        | 0            | 0                         | 0                           | 563,775   |  |
| 20 | 2020 | 50        | 45          | 272,902        | 275,637        | 0            | 0                         | 0                           | 548,539   |  |
| 21 | 2021 | 51        | 46          | 281,354        | 287,593        | 0            | 0                         | 0                           | 568,947   |  |

Ready

## The Whitneys' Detailed Reports

*ESPlanner's* detailed reports spell out the components of your family members' non-asset incomes, housing expenses, taxes, Social Security benefits, reserve fund, estates, and retirement accounts. Here are three examples of such reports. The first of these three screen shots show that Joe's labor income declines at age 50 when he stops consulting. It also shows that he starts collecting Social Security retirement benefits starting at age 65.

## Joe's Non-Asset Income Report

Microsoft Excel - Whitney\_Basic Profile\_Detailed\_report2461

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|    | A    | B         | Joe's Non-Asset Income |                |                |                          |                        |  |  |  |  |
|----|------|-----------|------------------------|----------------|----------------|--------------------------|------------------------|--|--|--|--|
| 1  | Year | Joe's Age |                        |                |                |                          |                        |  |  |  |  |
| 2  |      |           | Labor Income           | Pension Income | Annuity Income | Social Security Benefits | Total Non-Asset Income |  |  |  |  |
| 18 | 2018 | 48        | 100,000                | 0              | 0              | 0                        | 100,000                |  |  |  |  |
| 19 | 2019 | 49        | 100,000                | 0              | 0              | 0                        | 100,000                |  |  |  |  |
| 20 | 2020 | 50        | 75,000                 | 0              | 0              | 0                        | 75,000                 |  |  |  |  |
| 21 | 2021 | 51        | 75,000                 | 0              | 0              | 0                        | 75,000                 |  |  |  |  |
| 22 | 2022 | 52        | 75,000                 | 0              | 0              | 0                        | 75,000                 |  |  |  |  |
| 23 | 2023 | 53        | 75,000                 | 0              | 0              | 0                        | 75,000                 |  |  |  |  |
| 24 | 2024 | 54        | 75,000                 | 0              | 0              | 0                        | 75,000                 |  |  |  |  |
| 25 | 2025 | 55        | 75,000                 | 0              | 0              | 0                        | 75,000                 |  |  |  |  |
| 26 | 2026 | 56        | 75,000                 | 0              | 0              | 0                        | 75,000                 |  |  |  |  |
| 27 | 2027 | 57        | 75,000                 | 0              | 0              | 0                        | 75,000                 |  |  |  |  |
| 28 | 2028 | 58        | 75,000                 | 0              | 0              | 0                        | 75,000                 |  |  |  |  |
| 29 | 2029 | 59        | 75,000                 | 0              | 0              | 0                        | 75,000                 |  |  |  |  |
| 30 | 2030 | 60        | 75,000                 | 0              | 0              | 0                        | 75,000                 |  |  |  |  |
| 31 | 2031 | 61        | 75,000                 | 0              | 0              | 0                        | 75,000                 |  |  |  |  |
| 32 | 2032 | 62        | 75,000                 | 0              | 0              | 0                        | 75,000                 |  |  |  |  |
| 33 | 2033 | 63        | 75,000                 | 0              | 0              | 0                        | 75,000                 |  |  |  |  |
| 34 | 2034 | 64        | 75,000                 | 0              | 0              | 0                        | 75,000                 |  |  |  |  |
| 35 | 2035 | 65        | 0                      | 0              | 0              | 19,421                   | 19,421                 |  |  |  |  |
| 36 | 2036 | 66        | 0                      | 0              | 0              | 19,421                   | 19,421                 |  |  |  |  |

ESPlanner  
Married Rep

Husband's Non Asset Income

Wife's Non-Asset Income

Taxes

Housing

Husb

## The Whitneys' Tax Report

Microsoft Excel - Whitney\_Basic Profile\_Detailed\_report2461

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|    | A    | B         | C           | D                    | E                  | F              | G                | H           | I | J | K |  |
|----|------|-----------|-------------|----------------------|--------------------|----------------|------------------|-------------|---|---|---|--|
|    |      |           |             | Taxes                |                    |                |                  |             |   |   |   |  |
| 1  | Year | Joe's Age | Sally's Age | Federal Income Taxes | State Income Taxes | Joe's FICA Tax | Sally's FICA Tax | Total Taxes |   |   |   |  |
| 2  |      |           |             |                      |                    |                |                  |             |   |   |   |  |
| 3  | 2003 | 33        | 28          | 21,295               | 6,938              | 7,769          | 2,677            | 38,679      |   |   |   |  |
| 4  | 2004 | 34        | 29          | 21,939               | 7,112              | 7,864          | 2,758            | 39,673      |   |   |   |  |
| 5  | 2005 | 35        | 30          | 22,798               | 7,221              | 7,961          | 2,841            | 40,820      |   |   |   |  |
| 6  | 2006 | 36        | 31          | 23,368               | 7,375              | 8,058          | 2,926            | 41,727      |   |   |   |  |
| 7  | 2007 | 37        | 32          | 24,005               | 7,543              | 8,156          | 3,014            | 42,717      |   |   |   |  |
| 8  | 2008 | 38        | 33          | 24,712               | 7,713              | 8,255          | 3,104            | 43,784      |   |   |   |  |
| 9  | 2009 | 39        | 34          | 25,489               | 7,901              | 8,355          | 3,197            | 44,942      |   |   |   |  |
| 10 | 2010 | 40        | 35          | 25,900               | 8,014              | 8,455          | 3,197            | 45,566      |   |   |   |  |
| 11 | 2011 | 41        | 36          | 26,369               | 8,132              | 8,557          | 3,197            | 46,255      |   |   |   |  |
| 12 | 2012 | 42        | 37          | 26,882               | 8,253              | 8,659          | 3,197            | 46,992      |   |   |   |  |
| 13 | 2013 | 43        | 38          | 27,371               | 8,379              | 8,763          | 3,197            | 47,711      |   |   |   |  |
| 14 | 2014 | 44        | 39          | 27,926               | 8,513              | 8,867          | 3,197            | 48,504      |   |   |   |  |
| 15 | 2015 | 45        | 40          | 32,845               | 8,641              | 10,319         | 3,677            | 55,481      |   |   |   |  |
| 16 | 2016 | 46        | 41          | 33,435               | 8,765              | 10,441         | 3,677            | 56,318      |   |   |   |  |
| 17 | 2017 | 47        | 42          | 35,037               | 8,971              | 10,564         | 3,677            | 58,249      |   |   |   |  |
| 18 | 2018 | 48        | 43          | 35,204               | 9,006              | 10,689         | 3,677            | 58,576      |   |   |   |  |
| 19 | 2019 | 49        | 44          | 35,388               | 9,045              | 10,814         | 3,677            | 58,924      |   |   |   |  |
| 20 | 2020 | 50        | 45          | 27,418               | 7,511              | 6,598          | 3,677            | 45,204      |   |   |   |  |
| 21 | 2021 | 51        | 46          | 26,764               | 7,531              | 6,598          | 3,677            | 44,570      |   |   |   |  |

Husband's Non Asset Income / Wife's Non-Asset Income / Taxes / Housing / Husb2

## The Whitneys' Housing Report

|    | A    | B         | C           | Housing  |              |                            |                       |                    |                      |                  |             |
|----|------|-----------|-------------|----------|--------------|----------------------------|-----------------------|--------------------|----------------------|------------------|-------------|
|    | Year | Joe's Age | Sally's Age | Mortgage | Property Tax | Maintenance and Condo Fees | Homeowner's Insurance | Net Home Purchases | Housing Expenditures | Mortgage Balance | Home Equity |
| 3  | 2003 | 33        | 28          | 23,301   | 3,000        | 0                          | 2,500                 | 0                  | 28,801               | 196,631          | 109,096     |
| 4  | 2004 | 34        | 29          | 22,622   | 3,000        | 0                          | 2,500                 | 0                  | 28,122               | 192,915          | 118,159     |
| 5  | 2005 | 35        | 30          | 21,963   | 3,000        | 0                          | 2,500                 | 0                  | 27,463               | 188,815          | 127,207     |
| 6  | 2006 | 36        | 31          | 21,324   | 3,000        | 0                          | 2,500                 | 0                  | 26,824               | 184,293          | 136,258     |
| 7  | 2007 | 37        | 32          | 20,703   | 3,000        | 0                          | 2,500                 | 0                  | 26,203               | 179,304          | 145,331     |
| 8  | 2008 | 38        | 33          | 20,100   | 3,000        | 0                          | 2,500                 | 0                  | 25,600               | 173,800          | 154,445     |
| 9  | 2009 | 39        | 34          | 19,514   | 3,000        | 0                          | 2,500                 | 0                  | 25,014               | 167,729          | 163,621     |
| 10 | 2010 | 40        | 35          | 18,946   | 3,000        | 0                          | 2,500                 | 0                  | 24,446               | 161,031          | 172,881     |
| 11 | 2011 | 41        | 36          | 18,394   | 3,000        | 0                          | 2,500                 | 0                  | 23,894               | 153,642          | 182,246     |
| 12 | 2012 | 42        | 37          | 17,858   | 3,000        | 0                          | 2,500                 | 0                  | 23,358               | 145,491          | 191,741     |
| 13 | 2013 | 43        | 38          | 17,338   | 3,000        | 0                          | 2,500                 | 0                  | 22,838               | 136,499          | 201,390     |
| 14 | 2014 | 44        | 39          | 16,833   | 3,000        | 0                          | 2,500                 | 0                  | 22,333               | 126,580          | 211,219     |
| 15 | 2015 | 45        | 40          | 16,343   | 3,000        | 0                          | 2,500                 | 0                  | 21,843               | 115,638          | 221,256     |
| 16 | 2016 | 46        | 41          | 15,867   | 3,000        | 0                          | 2,500                 | 0                  | 21,367               | 103,567          | 231,530     |
| 17 | 2017 | 47        | 42          | 15,405   | 3,000        | 0                          | 2,500                 | 0                  | 20,905               | 90,250           | 242,072     |
| 18 | 2018 | 48        | 43          | 14,956   | 3,000        | 0                          | 2,500                 | 0                  | 20,456               | 75,560           | 252,914     |
| 19 | 2019 | 49        | 44          | 14,520   | 3,000        | 0                          | 2,500                 | 0                  | 20,020               | 59,354           | 264,090     |
| 20 | 2020 | 50        | 45          | 14,097   | 3,000        | 0                          | 2,500                 | 0                  | 19,597               | 41,477           | 275,637     |
| 21 | 2021 | 51        | 46          | 13,687   | 3,000        | 0                          | 2,500                 | 0                  | 19,187               | 21,756           | 287,593     |

## The Whitneys' Survivor Reports

The next screen shot shows Sally's annual recommendations as a survivor were Joe to die at the end of his 33<sup>rd</sup> year. The first thing to notice is that Sally's living standard is precisely the same \$25,527 per equivalent adult as she and other family members experience if Joe lives to a ripe old age. The next thing to notice is that Sally's recommended consumption does not rise in 2005 when Sally Jr. would otherwise have been born; i.e., the program realizes that if Joe is deceased, Sally Jr. will not be forthcoming. The third thing to notice is that Sally's recommended consumption varies over time as Joe Jr. becomes more expensive in 2011 and then leaves the household in 2017. Although it's not shown, Sally's recommended survivor consumption rises by 10 percent when she reaches age 65, to ensure that she enjoys precisely the same living standard when she's a widow as she would had Joe not died.

The next question to ask is whether Sally, as a survivor, can actually afford the same living standard. The answer is shown in her survivor Regular Assets report, part of which is shown below. As this report indicates, Sally begins life as a widow with \$811,320. As Joe's Estate

## Sally's Survivor Annual Recommendations

Microsoft Excel - Sally \_Whitney\_Basic Profile\_Survivor\_report\_S2461

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| Sally's Survivor Annual Recommendations |             |         |             |                |                           |  |
|-----------------------------------------|-------------|---------|-------------|----------------|---------------------------|--|
| Year                                    | Sally's Age | Saving  | Consumption | Life Insurance | Living Standard Per Adult |  |
| 2004                                    | 29          | -3,709  | 36,625      | 0              | 25,557                    |  |
| 2005                                    | 30          | -2,934  | 36,625      | 0              | 25,557                    |  |
| 2006                                    | 31          | -2,150  | 36,625      | 0              | 25,557                    |  |
| 2007                                    | 32          | -1,440  | 36,625      | 0              | 25,557                    |  |
| 2008                                    | 33          | -750    | 36,625      | 0              | 25,557                    |  |
| 2009                                    | 34          | 119     | 36,625      | 0              | 25,557                    |  |
| 2010                                    | 35          | 674     | 36,625      | 0              | 25,557                    |  |
| 2011                                    | 36          | -383    | 38,072      | 0              | 25,557                    |  |
| 2012                                    | 37          | 8       | 38,072      | 0              | 25,557                    |  |
| 2013                                    | 38          | 364     | 38,072      | 0              | 25,557                    |  |
| 2014                                    | 39          | 385     | 38,072      | 0              | 25,557                    |  |
| 2015                                    | 40          | -5,533  | 38,072      | 0              | 25,557                    |  |
| 2016                                    | 41          | -5,487  | 38,072      | 0              | 25,557                    |  |
| 2017                                    | 42          | -40,934 | 25,557      | 0              | 25,557                    |  |
| 2018                                    | 43          | -41,283 | 25,557      | 0              | 25,557                    |  |
| 2019                                    | 44          | -41,756 | 25,557      | 0              | 25,557                    |  |
| 2020                                    | 45          | -42,299 | 25,557      | 0              | 25,557                    |  |
| 2021                                    | 46          | -7,918  | 25,557      | 0              | 25,557                    |  |
| 2022                                    | 47          | -8,323  | 25,557      | 0              | 25,557                    |  |

Annual Recommendations Regular Assets Income Spending Non-Asset Income

## Sally's Survivor Regular Assets

Microsoft Excel - Sally \_Whitney\_Basic Profile\_Survivor\_report\_S2461

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| Sally's Survivor Regular Assets |             |              |           |        |          |                |
|---------------------------------|-------------|--------------|-----------|--------|----------|----------------|
| Year                            | Sally's Age | Total Income | Spending  | Taxes  | Saving   | Regular Assets |
| 2003                            | 28          | 0            | (811,320) | 0      | 811,320  | 811,320        |
| 2004                            | 29          | 77,375       | 64,747    | 16,337 | (3,709)  | 807,611        |
| 2005                            | 30          | 77,859       | 64,088    | 16,705 | (2,934)  | 804,677        |
| 2006                            | 31          | 78,383       | 63,449    | 17,084 | (2,150)  | 802,526        |
| 2007                            | 32          | 78,946       | 62,828    | 17,556 | (1,440)  | 801,086        |
| 2008                            | 33          | 79,548       | 62,225    | 18,073 | (750)    | 800,336        |
| 2009                            | 34          | 80,188       | 61,639    | 18,429 | 119      | 800,456        |
| 2010                            | 35          | 80,245       | 61,071    | 18,500 | 674      | 801,130        |
| 2011                            | 36          | 80,319       | 61,966    | 18,735 | (383)    | 800,748        |
| 2012                            | 37          | 80,362       | 61,431    | 19,924 | 8        | 800,756        |
| 2013                            | 38          | 80,419       | 60,910    | 19,143 | 264      | 801,120        |
| 2014                            | 39          | 80,131       | 60,405    | 19,341 | 385      | 801,505        |
| 2015                            | 40          | 77,141       | 59,915    | 22,759 | (5,533)  | 795,971        |
| 2016                            | 41          | 76,980       | 59,439    | 23,028 | (5,487)  | 790,484        |
| 2017                            | 42          | 64,816       | 81,462    | 24,288 | (40,934) | 749,550        |
| 2018                            | 43          | 63,624       | 81,013    | 23,894 | (41,283) | 708,266        |
| 2019                            | 44          | 62,421       | 80,578    | 23,600 | (41,756) | 666,510        |
| 2020                            | 45          | 61,205       | 80,155    | 23,349 | (42,299) | 624,211        |
| 2021                            | 46          | 59,973       | 44,744    | 23,146 | (7,918)  | 616,293        |

Annual Recommendations Regular Assets Income Spending Non-Asset Income

Report (which is one of the detailed reports) records, his net estate that he leaves to Sally if he dies at age 33 is precisely \$811,320. It consists of the \$122,837 in regular assets of the couple, plus the \$713,483 in recommended life insurance, less Joe's desired bequest and funeral expenses, which total \$25,000. This

shows that *ESPlanner's* life insurance recommendation is, to the dollar, exactly what Sally needs to maintain her living standard and that of Joe Jr.

In addition to the annual recommendations and regular asset reports, the other survivor reports provide detailed information about sources of income, taxes, Social Security benefits, housing, and spending of survivors.

### **Joe Retires Early**

Our next goal is to show you how easy it is to use *ESPlanner* to determine implications for the Whitneys' living standard of changes in financial plans and goals. Our first example involves Joe's retiring at age 60, rather than 65. To consider this case, we return to the Family List by clicking Show on the Family Tool Bar. Next we select Basic Plan under Whitney. Finally, we click *Save As* on the Profiles Tool Bar and enter *Retire Early* as the new file name. The program automatically copies all the inputs from Basic Plan into Retire Early.

We then click on *Retire Early*, click *Inputs*, click *Earnings* on the folder list, select Joe, go to the earnings grid, selected the year that Joe reaches age 60, enter zero earning for that year, and then grow those earnings at a zero rate. This fills in earnings of zero for ages 60 and beyond. Before hitting the *Create Reports* button, we do one other thing. We go to the Future Covered Earnings screen in the Social Security folder and copy Joe's future earnings.

Compared with the Basic Plan, the program now recommends that the Whitneys consume only \$46,800 in the current year, rather than \$50,120. This entails a living standard reduction of 6.6 percent as can be double checked by comparing the living standard per adult figures across the two sets of annual recommendations. The program also recommends that the Whitneys save 17.1 percent more this year -- \$23,233 rather than \$19,837. Because Joe's future earnings are reduced, he has less future income to insure. Consequently, the program recommends that Joe reduce his current life insurance by close to \$100,000.

## Joe and Sally Do Contingent Planning

We next demonstrate how to do contingent planning. Specifically, we return to the base case assumption but assume that were Joe to die, Sally would choose a more demanding career and earn \$75,000 each year measured in today's dollars. We also assume that she'd need to hire a nanny for 7 years to help take care of the children, which would cost \$15,000 per year.

To activate contingent planning, we click *Show* on the Family Tool Bar and return to the Whitney family screen. There we check off contingent planning. When we click on *Inputs* under *Basic Plan*, the input folder list appears, but with contingent planning input folders added to the list.

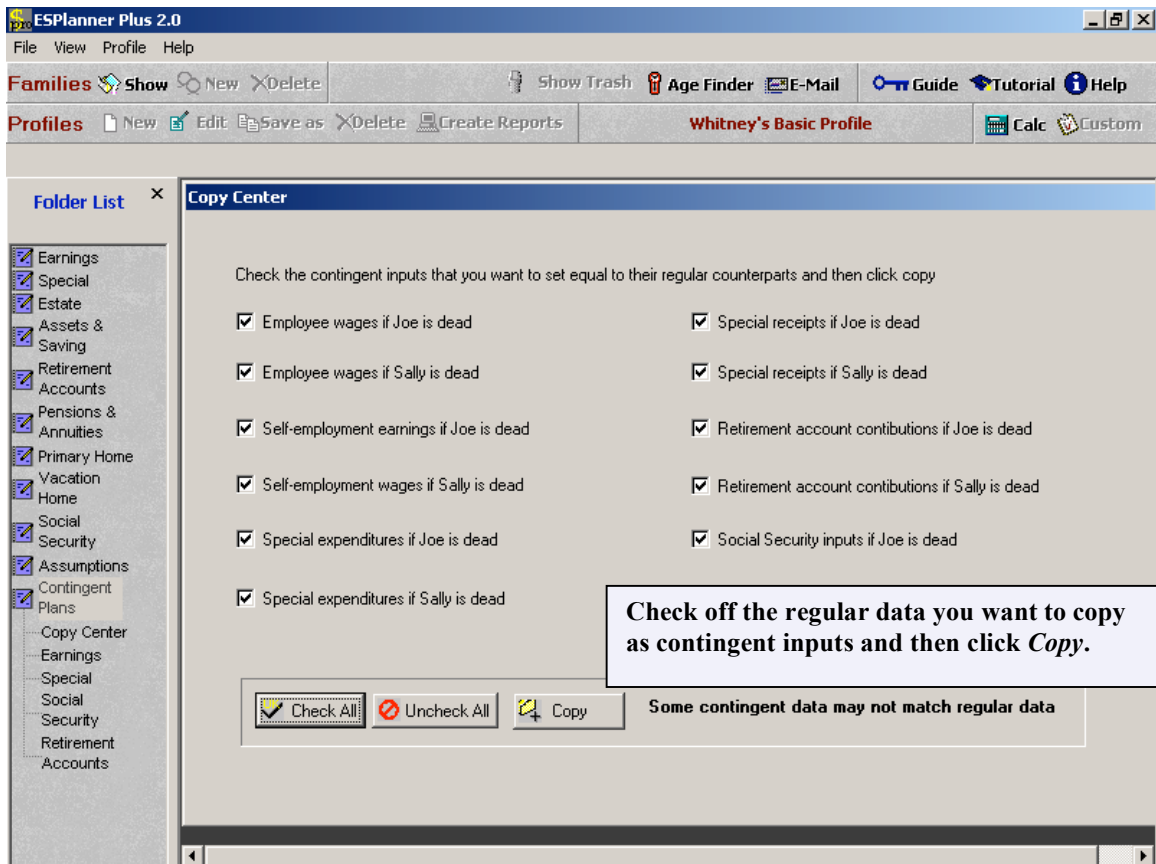
Since many of your family members' contingent plans may be the same as their regular plans, the program permits you to copy their respective regular plans into the contingent planning input fields. This can be done by opening the *Copy Center* folder, checking off what regular inputs you'd like to copy to their contingent counterparts, and then clicking *Copy*.

**If you are running contingent planning (have activated contingent planning), it's very important to bear in mind that most contingent entries, such as contingent future earnings, will be zero unless you enter alternative values. If, for example, you don't tell the program that Sally will have earnings if Joe dies, the program will assume she will have no earnings in that eventuality and recommend much more life insurance than is really needed.**

In this case, we copied all the inputs except Sally's earnings, her Social Security inputs, and her special expenditures if Joe dies. We then clicked first on *Social Security* and then on *Special* under *Contingent Planning* to enter the right covered earnings for Sally and the right nanny expenses in the event Joe dies.

The new results are a lot different from the previous results with respect to Joe's recommended life insurance holdings. The program was recommending that Joe purchase \$713,483 in life insurance. But now that it knows that Sally will double her earnings if Joe dies, it recommends that Joe purchase only \$2,133 in life insurance.

## Using the Copy Center To Do Contingent Planning



## Entering the Whitney's' Contingent Plans

**Folder List**

- Earnings
- Special
- Estate
- Assets & Savings
- Retirement Accounts
- Pensions & Annuities
- Primary Home
- Vacation Home
- Social Security
- Assumptions
- Contingent Plans
- Copy Center
- Earnings
- Special
- Social Security
- Retirement Accounts

**Contingent Earnings**

1. Set Retirement Date

☒ Joe 1 / 1 / 2035 Age 65

☐ Sally 1 / 1 / 2040 Age 70

Contingent Employee Wages | Contingent Self-Employment Earnings

2. Select a year on the grid

3. Enter earnings for 2003 in today's dollars 0 Apply

% 0 Grow

**Annual Employee Wages for Joe**

| Year | Age | Today's Dollars | Dollars |
|------|-----|-----------------|---------|
| 2003 | 33  | 75,000          | 75,000  |
| 2004 | 34  | 75,000          | 77,250  |
| 2005 | 35  | 75,000          | 79,568  |
| 2006 | 36  | 75,000          | 81,955  |
| 2007 | 37  | 75,000          | 84,413  |
| 2008 | 38  | 75,000          | 86,946  |
| 2009 | 39  | 75,000          | 89,554  |
| 2010 | 40  | 75,000          | 92,241  |
| 2011 | 41  | 75,000          | 95,008  |

Clear Grid

**To do contingent planning, open these folders.**

### The Whitneys Accumulate a Reserve Fund

Our next goal is to illustrate the use of the program's *Reserve Fund* option. Your family may want to hold some funds aside in case of an emergency. *ESPlanner's* Reserve Fund screen allows you to enter your family's current reserve fund as well as specify how it would like the fund to change through time. The program treats contributions to the fund like special expenditures and withdrawals from the fund like special receipts.

In the case of couples, whether married or partnered, when a spouse or partner passes away, the reserve fund is used by the surviving spouse/partner to finance her/his remaining lifetime consumption. If both spouses/partners die in the same year, the reserve fund is used to finance the bequests, funerals, and the living standards and other special expenses of surviving children. In the net worth charts in which one spouse will outlive the other (if both live to their maximum ages of life), the reserve fund ends in the year the longer-lived spouse becomes a widow or widower for sure.

To enter Reserve Fund data in the Whitneys' basic plan, we clicked *Special* on the Input Folder List, and then clicked *Reserve Fund*. In the screen shot below we assumed in step 1 that the Whitney's current reserve fund is \$10,000. In step 2 we assumed that they earn 6 percent nominal rate of return (rate of return

before inflation) on the fund. In Step 3 we specified that the Whitneys want to have a \$13,000 fund (valued in today's dollars) at the end of the current year. In step 4 we assumed that 30 percent of the funds income would be used to cover taxes. In step 5, we grew the fund by 5 percent per year. Finally, in step 6 we specified that fund income is taxable.

When we run the Whitneys' basic plan, but with these reserve fund information entered, recommended consumption in the current year falls from \$50,120 to \$47,270. The reserve fund assets now show up in the Net Worth Report, and net contributions to the reserve fund now show up in the Spending Report.

### **The Whitneys Have Retirement Accounts**

Next let's give the Whitneys current retirement account assets and assume they contribute over time to retirement accounts. As the next four screen shots indicate, the program allows you to specify current holdings in and future contributions to employer accounts, individual deductible accounts, and Roth IRA accounts.

You can also tell the program when family members will stop contributing to these accounts, how much they will contribute each year, when they will start and stop withdrawing their retirement account assets, the fraction of their retirement account balances that will be converted to annuities at the initial date of withdrawal, the type of annuity they will choose, and the order in which non-annuitized account balances will be withdrawn.

The fifth screen shot in this section shows Joe's *Retirement Account Report*, which tracks the evolution of Joe's retirement account assets, including his and his employer's contributions to his accounts as well as his withdrawals from his accounts. Like the regular asset report, the retirement account reports zero out at the end showing you that all the funds and income earned on the accounts are used by *ESPlanner* for meeting recommended consumption and other expenditures.

You can run your family's plan with different retirement account contribution levels, different degrees of annuitization, different retirement account withdrawal dates and withdrawal orderings, different annuity designs, etc. Each time you run the program, check the resulting living standard generated by the program. Since the goal is to maximize your family's living standard, you'll quickly be able to determine how retirement accounts can help you meet that goal.

## The Whitneys Accumulate a Reserve Fund

**ESPlanner Plus 2.0**

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**Profiles** New Edit Save as Delete Create Reports **Whitney's Basic Profile** Calc Custom

**Folder List**

- Earnings
- Special
- Estate
- Assets & Saving
- Retirement Accounts
- Pensions & Annuities
- Primary Home
- Vacation Home
- Social Security
- Assumptions
- Contingent Plans
- Copy Center
- Earnings
- Special
- Social Security
- Retirement Accounts

**Special**

Special Expenditures Special Receipts **Reserve Fund**

1. Fund's value at end of last year 10000 Apply

2. Desired fund in today's dollars at end of 2003 13000 Apply

3. Fund's nominal rate of return % 6 Apply

4. Click another year in the grid and enter desired fund or grow the fund in real terms at rate % 2 Grow

5. Percentage share of fund income to be spent on taxes % 30 Apply

6. Check if reserve fund income is taxable ☐

| Reserve Fund |                              |                      |                                  |                          |
|--------------|------------------------------|----------------------|----------------------------------|--------------------------|
| Year         | Reserve Fund Today's Dollars | Reserve Fund Dollars | Net Contribution Today's Dollars | Net Contribution Dollars |
| 2003         | 13,000                       | 13,000               | 2,883                            | 2,883                    |
| 2004         | 13,260                       | 13,658               | 109                              | 112                      |
| 2005         | 13,525                       | 14,349               | 111                              | 117                      |
| 2006         | 13,796                       | 15,075               | 113                              | 123                      |
| 2007         | 14,072                       | 15,838               | 115                              | 130                      |
| 2008         | 14,353                       | 16,639               | 117                              | 136                      |
| 2009         | 14,640                       | 17,481               | 120                              | 143                      |
| 2010         | 14,933                       | 18,366               | 122                              | 150                      |
| 2011         | 15,232                       | 19,295               | 125                              | 158                      |
| 2012         | 15,536                       | 20,271               | 127                              | 166                      |
| 2013         | 15,847                       | 21,297               | 130                              | 174                      |
| 2014         | 16,164                       | 22,375               | 132                              | 183                      |
| 2015         | 16,487                       | 23,507               | 135                              | 192                      |
| 2016         | 16,817                       | 24,696               | 138                              | 202                      |
| 2017         | 17,153                       | 25,946               | 140                              | 212                      |
| 2018         | 17,496                       | 27,259               | 143                              | 223                      |

Clear Grid

## The Whitneys' Retirement Account Assets

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**Folder List**

- Earnings
- Special
- Estate
- Assets & Saving
- Retirement Accounts
- Pensions & Annuities
- Primary Home
- Vacation Home
- Social Security
- Assumptions
- Contingent Plans
- Copy Center
- Earnings
- Special
- Social Security
- Retirement Accounts

**Retirement Accounts**

Assets Contributions Withdrawals Choice of Annuity

| Individual Deductible Accounts                         | Joe   | Sally |
|--------------------------------------------------------|-------|-------|
| 401(k), 403(b), & Other Defined Contributions Accounts | 20000 | 17000 |
| Keogh and SEP Plans                                    | 0     | 0     |
| IRAs                                                   | 2500  | 3000  |
| Supplemental Retirement Accounts                       | 0     | 0     |
| <b>Employer Accounts</b>                               | 15000 | 10500 |
| <b>Roth IRAs</b>                                       | 2000  | 750   |

## The Whitneys Contribute to Retirement Accounts

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**Profiles** New Edit Save as XDelete Create Reports **Whitney's Basic Profile** Calc Custom

**Folder List** x

- Earnings
- Special
- Estate
- Assets & Saving
- Retirement Accounts
- Pensions & Annuities
- Primary Home
- Vacation Home
- Social Security
- Assumptions
- Contingent Plans
- Copy Center
- Earnings
- Special
- Social Security
- Retirement Accounts

**Retirement Accounts**

Assets Contributions Withdrawals Choice of Annuity

1. Choose

☐ Joe

☒ Sally

2. Joe's age at last contribution 59

Sally's age at last contribution 59

3. Select

☐ Individual deductible contribution

☐ Employer's contribution

☒ Roth IRA contribution

4. Enter contribution for 2003 in today's dollars 1000 Apply

5. Click on another year in the grid and enter contribution, or

6. Specify annual real percentage growth in contributions starting in % 0 Grow

**Retirement Account Contributions**

| Year | Age | Individual | Employer | Roth IRA |
|------|-----|------------|----------|----------|
| 2003 | 28  | 2,000      | 1,500    | 1,000    |
| 2004 | 29  | 2,000      | 1,500    | 1,000    |
| 2005 | 30  | 2,000      | 1,500    | 1,000    |
| 2006 | 31  | 2,000      | 1,500    | 1,000    |
| 2007 | 32  | 2,000      | 1,500    | 1,000    |
| 2008 | 33  | 2,000      | 1,500    | 1,000    |
| 2009 | 34  | 2,000      | 1,500    | 1,000    |
| 2010 | 35  | 2,000      | 1,500    | 1,000    |
| 2011 | 36  | 2,000      | 1,500    | 1,000    |
| 2012 | 37  | 2,000      | 1,500    | 1,000    |
| 2013 | 38  | 2,000      | 1,500    | 1,000    |
| 2014 | 39  | 2,000      | 1,500    | 1,000    |
| 2015 | 40  | 2,000      | 1,500    | 1,000    |
| 2016 | 41  | 2,000      | 1,500    | 1,000    |

To change the year, select that row from the grid

Clear Grid

## The Whitneys Choose How to Withdraw their Retirement Accounts Assets

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**Folder List** x

- Earnings
- Special
- Estate
- Assets & Saving
- Retirement Accounts
- Pensions & Annuities
- Primary Home
- Vacation Home
- Social Security
- Assumptions
- Contingent Plans
- Copy Center
- Earnings
- Special
- Social Security
- Retirement Accounts

**Retirement Accounts**

Assets Contributions Withdrawals Choice of Annuity

1. Select age at first withdrawal

Joe 60 Sally 65

2. Select age at last withdrawal

Joe 95 Sally 95

3. Specify percent of assets to be annuitized (%)

Joe 50 Sally 100

4. Specify percent of non-annuitized assets to be spent \*

Joe 80 Sally 100

**Joe's Withdrawal Order**

- Individual Deductible Accounts
- Employer Accounts
- Roth IRA's

**Sally's Withdrawal Order**

- Individual Deductible Accounts
- Roth IRA's
- Employer Accounts

5. To change the order of withdrawal, select the item you want to move and click the UP or DOWN arrow on the corresponding list.

\* These assets will be withdrawn smoothly and the remainder will be saved to extent permitted by minimum distribution requirements.

## The Whitneys Design their Retirement Account Annuities

ESPlanner Plus 2.0

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Profiles New Edit Save as Delete Create Reports Whitney's Basic Profile Calc Custom

Folder List

- Earnings
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- Estate
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- Retirement Accounts
- Pensions & Annuities
- Primary Home
- Vacation Home
- Social Security
- Assumptions
- Contingent Plans
- Copy Center
- Earnings
- Special
- Social Security
- Retirement Accounts

Retirement Accounts

Assets Contributions Withdrawals Choice of Annuity

|                                                                   | Joe   | Sally |
|-------------------------------------------------------------------|-------|-------|
| 1. What percentage of annuity payments does the survivor receive? | % 50  | 40    |
| 2. Number of years annuity payment is guaranteed                  | 10    | 6     |
| 3. Annuity will grow annually by                                  | % 3.5 | 0     |
| 4. Annuity stops after guarantee period                           | Yes   | No    |

**Joe's Annuity**

☐ Fixed and earns a nominal rate of return of % 0

☒ Variable and invested in stock

☐ Variable and invested in bonds

**Sally's Annuity**

☒ Fixed and earns a nominal rate of return of % 7

☐ Variable and invested in stock

☐ Variable and invested in bonds

## The Evolution of Joe's Retirement Account

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AG60 =

|    | A    | B         | Joe's Retirement Accounts       |                        |                        |                           |             |                           |                           | J                          | K   |
|----|------|-----------|---------------------------------|------------------------|------------------------|---------------------------|-------------|---------------------------|---------------------------|----------------------------|-----|
| 1  | Year | Joe's Age |                                 |                        |                        |                           |             |                           |                           | Retirement Account Annuity |     |
| 2  |      |           | Retirement Account Asset Income | Employee Contributions | Employer Contributions | Contributions to Roth IRA | Withdrawals | Retirement Account Saving | Retirement Account Assets |                            |     |
| 47 | 2047 | 77        | 3,161                           | 0                      | 0                      | 0                         | 7,518       | (4,357)                   | 104,161                   | 3,252                      | ESP |
| 48 | 2048 | 78        | 3,034                           | 0                      | 0                      | 0                         | 7,518       | (4,484)                   | 99,677                    | 3,283                      |     |
| 49 | 2049 | 79        | 2,903                           | 0                      | 0                      | 0                         | 7,518       | (4,615)                   | 95,063                    | 3,315                      |     |
| 50 | 2050 | 80        | 2,769                           | 0                      | 0                      | 0                         | 7,518       | (4,749)                   | 90,314                    | 3,347                      |     |
| 51 | 2051 | 81        | 2,631                           | 0                      | 0                      | 0                         | 7,518       | (4,887)                   | 85,427                    | 3,380                      |     |
| 52 | 2052 | 82        | 2,488                           | 0                      | 0                      | 0                         | 7,518       | (5,030)                   | 80,398                    | 3,413                      |     |
| 53 | 2053 | 83        | 2,342                           | 0                      | 0                      | 0                         | 7,518       | (5,176)                   | 75,222                    | 3,446                      |     |
| 54 | 2054 | 84        | 2,191                           | 0                      | 0                      | 0                         | 7,518       | (5,327)                   | 69,895                    | 3,479                      |     |
| 55 | 2055 | 85        | 2,036                           | 0                      | 0                      | 0                         | 7,518       | (5,482)                   | 64,413                    | 3,513                      |     |
| 56 | 2056 | 86        | 1,876                           | 0                      | 0                      | 0                         | 7,518       | (5,642)                   | 58,772                    | 3,547                      |     |
| 57 | 2057 | 87        | 1,712                           | 0                      | 0                      | 0                         | 7,518       | (5,806)                   | 52,966                    | 3,582                      |     |
| 58 | 2058 | 88        | 1,543                           | 0                      | 0                      | 0                         | 7,518       | (5,975)                   | 46,991                    | 3,616                      |     |
| 59 | 2059 | 89        | 1,369                           | 0                      | 0                      | 0                         | 7,518       | (6,149)                   | 40,842                    | 3,651                      |     |
| 60 | 2060 | 90        | 1,190                           | 0                      | 0                      | 0                         | 7,518       | (6,328)                   | 34,514                    | 3,687                      |     |
| 61 | 2061 | 91        | 1,005                           | 0                      | 0                      | 0                         | 7,518       | (6,513)                   | 28,002                    | 3,723                      |     |
| 62 | 2062 | 92        | 816                             | 0                      | 0                      | 0                         | 7,518       | (6,702)                   | 21,300                    | 3,759                      |     |
| 63 | 2063 | 93        | 620                             | 0                      | 0                      | 0                         | 7,518       | (6,898)                   | 14,403                    | 3,795                      |     |
| 64 | 2064 | 94        | 420                             | 0                      | 0                      | 0                         | 7,518       | (7,098)                   | 7,305                     | 3,832                      |     |
| 65 | 2065 | 95        | 213                             | 0                      | 0                      | 0                         | 7,518       | (7,305)                   | 0                         | 3,869                      |     |

Wife's Non-Asset Income Taxes Housing Husband's Retirement Accounts Wi

Ready

### Joe and Sally Expect to Receive a Very Large Inheritance

Let's now assume that Joe and Sally expect to receive a very large inheritance, say \$5 million, but not for 10 years. Since they are unable to borrow against this future receipt, the couple is strapped for cash or, in the language of economists, borrowing or liquidity constrained and cannot enjoy as high a living standard in the next 10 years as they will thereafter.

*ESPlanner* deals with borrowing constraints by generating the smoothest living standard path for your family without putting it into debt or, if it is able to borrow, without putting it into more debt than the borrowing limit specified in the Economic Assumptions folder.

We enter Joe's and Sally's expected inheritance in the *Special Receipts* screen in the *Special* input folder. The spending report for this case is shown below. As you can see, recommended consumption jumps dramatically in 2013 when the couple receives their inheritance. Recommended saving jumps as well since the couple saves the vast majority of what it inherits in order to enjoy a higher living standard in future years as well. Note also that in the ten years prior to receiving an inheritance, the program smoothes the

couple's living standard as well. This is a key feature of *ESPlanner's* consumption smoothing. *ESPlanner* not only smoothes your family's living standard over its entire life cycle to the maximum extent possible given its borrowing limits, it also smoothes your family's living standard during each sub interval of its life cycle.

## Recommended Consumption When Joe and Sally Inherit

| Total Spending |           |             |             |                      |                                   |                      |                                        |                                          |                              |                         |                |  |
|----------------|-----------|-------------|-------------|----------------------|-----------------------------------|----------------------|----------------------------------------|------------------------------------------|------------------------------|-------------------------|----------------|--|
| Year           | Joe's Age | Sally's Age | Consumption | Special Expenditures | Net Contributions to Reserve Fund | Housing Expenditures | Joe's Retirement Account Contributions | Sally's Retirement Account Contributions | Excess Funerals and Bequests | Life Insurance Premiums | Total Spending |  |
| 2003           | 33        | 28          | 74,581      | 0                    | 0                                 | 28,801               | 0                                      | 0                                        | 0                            | 0                       | 103,382        |  |
| 2004           | 34        | 29          | 74,581      | 0                    | 0                                 | 28,122               | 0                                      | 0                                        | 0                            | 0                       | 102,703        |  |
| 2005           | 35        | 30          | 87,199      | 0                    | 0                                 | 27,463               | 0                                      | 0                                        | 0                            | 0                       | 114,662        |  |
| 2006           | 36        | 31          | 87,199      | 0                    | 0                                 | 26,824               | 0                                      | 0                                        | 0                            | 0                       | 114,023        |  |
| 2007           | 37        | 32          | 87,199      | 0                    | 0                                 | 26,203               | 0                                      | 0                                        | 0                            | 0                       | 113,402        |  |
| 2008           | 38        | 33          | 87,199      | 0                    | 0                                 | 25,600               | 0                                      | 0                                        | 0                            | 0                       | 112,799        |  |
| 2009           | 39        | 34          | 87,199      | 0                    | 0                                 | 25,014               | 0                                      | 0                                        | 0                            | 0                       | 112,213        |  |
| 2010           | 40        | 35          | 87,199      | 0                    | 0                                 | 24,446               | 0                                      | 0                                        | 0                            | 5                       | 111,650        |  |
| 2011           | 41        | 36          | 88,930      | 0                    | 0                                 | 23,894               | 0                                      | 0                                        | 0                            | 38                      | 112,862        |  |
| 2012           | 42        | 37          | 88,930      | 0                    | 0                                 | 23,358               | 0                                      | 0                                        | 0                            | 78                      | 112,366        |  |
| 2013           | 43        | 38          | 313,635     | 0                    | 0                                 | 22,838               | 0                                      | 0                                        | 0                            | 0                       | 336,473        |  |
| 2014           | 44        | 39          | 313,635     | 0                    | 0                                 | 22,333               | 0                                      | 0                                        | 0                            | 0                       | 335,968        |  |
| 2015           | 45        | 40          | 313,635     | 0                    | 0                                 | 21,843               | 0                                      | 0                                        | 0                            | 0                       | 335,478        |  |
| 2016           | 46        | 41          | 313,635     | 0                    | 0                                 | 21,367               | 0                                      | 0                                        | 0                            | 0                       | 335,002        |  |
| 2017           | 47        | 42          | 263,023     | 35,000               | 0                                 | 20,305               | 0                                      | 0                                        | 0                            | 0                       | 318,334        |  |
| 2018           | 48        | 43          | 263,596     | 35,000               | 0                                 | 20,456               | 0                                      | 0                                        | 0                            | 0                       | 325,052        |  |
| 2019           | 49        | 44          | 269,596     | 35,000               | 0                                 | 20,020               | 0                                      | 0                                        | 0                            | 0                       | 324,616        |  |
| 2020           | 50        | 45          | 269,596     | 35,000               | 0                                 | 19,597               | 0                                      | 0                                        | 0                            | 0                       | 324,193        |  |
| 2021           | 51        | 46          | 269,596     | 0                    | 0                                 | 19,187               | 0                                      | 0                                        | 0                            | 0                       | 288,783        |  |

## Asset Accumulation When Joe and Sally Inherit

| Regular Assets |           |             |              |                |         |           |                |
|----------------|-----------|-------------|--------------|----------------|---------|-----------|----------------|
| Year           | Joe's Age | Sally's Age | Total Income | Total Spending | Taxes   | Saving    | Regular Assets |
| 2003           | 33        | 28          | 138,000      | 103,382        | 38,679  | (4,061)   | 98,939         |
| 2004           | 34        | 29          | 138,932      | 102,703        | 39,217  | (2,999)   | 95,951         |
| 2005           | 35        | 30          | 139,926      | 114,662        | 39,769  | (14,505)  | 81,446         |
| 2006           | 36        | 31          | 140,618      | 114,023        | 40,166  | (13,571)  | 67,875         |
| 2007           | 37        | 32          | 141,370      | 113,401        | 40,616  | (12,648)  | 55,226         |
| 2008           | 38        | 33          | 142,183      | 112,799        | 41,151  | (11,766)  | 43,460         |
| 2009           | 39        | 34          | 143,058      | 112,213        | 41,299  | (10,445)  | 33,016         |
| 2010           | 40        | 35          | 142,754      | 111,650        | 41,140  | (10,036)  | 22,979         |
| 2011           | 41        | 36          | 142,461      | 112,862        | 41,161  | (11,562)  | 11,417         |
| 2012           | 42        | 37          | 142,125      | 112,366        | 41,176  | (11,417)  | 0              |
| 2013           | 43        | 38          | 10,141,792   | 336,473        | 41,218  | 9,764,101 | 9,764,101      |
| 2014           | 44        | 39          | 426,183      | 335,968        | 276,138 | (185,923) | 9,578,178      |
| 2015           | 45        | 40          | 420,768      | 335,478        | 302,906 | (217,616) | 9,360,561      |
| 2016           | 46        | 41          | 414,430      | 335,002        | 297,527 | (218,099) | 9,142,463      |
| 2017           | 47        | 42          | 408,077      | 318,333        | 293,015 | (203,871) | 8,938,592      |
| 2018           | 48        | 43          | 402,139      | 325,052        | 287,918 | (210,630) | 8,727,762      |
| 2019           | 49        | 44          | 395,999      | 324,616        | 282,452 | (211,070) | 8,516,692      |
| 2020           | 50        | 45          | 364,851      | 324,193        | 261,905 | (221,247) | 8,295,445      |
| 2021           | 51        | 46          | 358,407      | 288,782        | 256,086 | (186,462) | 8,108,984      |

The next screen shot shows the couple's regular assets before and after receiving the inheritance. Note that the couple runs their regular assets down to zero prior to 2013 and then accumulates assets thereafter. This makes sense. Why save for years after 2013 when you know you'll be receiving a huge windfall.

## Joe and Sally Downsize and Retire in Florida

The next screen shot shows how we tell the program that Joe and Sally intend to sell their Oklahoma home, move to Florida, and rent when Joe reaches age 65. We access this screen by clicking on the housing folder and then selecting the "First Change of Home" tab.

### Joe and Sally Move to Florida

The screenshot shows the ESPlanner Plus 2.0 software interface. The 'Folder List' on the left includes categories like Earnings, Special, Estate, Assets & Saving, Retirement Accounts, Pensions & Annuities, Primary Home, Vacation Home, Social Security, Assumptions, Contingent Plans, Copy Center, Earnings, Special, Social Security, Retirement Accounts, and Accounts. The 'Primary Home' tab is active, with sub-tabs for 'Current Home', 'First Change of Home', and 'Second Change of Home'. The 'First Change of Home' sub-tab is selected.

The main form area contains the following sections:

- 1. Check here to specify a change in the primary home** (checked)
- 2. Please enter all amounts in today's dollars** (with a 'Clear Values' button)
- Change of Home**
  - Change in primary home occurs in: 2003
  - State to which you'll move: FL
- Rental of New Home**
  - Monthly rent: 2000
  - Other monthly rental expense: 0
- Purchase of New Home**
  - Purchase price: 0
  - Annual property taxes: 0
  - Annual homeowner's insurance: 0
  - Annual maintenance and condo fees: 0
  - Closing costs: 0
  - Percent downpayment: 0%
  - Mortgage interest rate: 7%
  - Years of mortgage: 15
  - Points: 0
  - Annual real appreciation rate: 0%

A blue bar at the bottom of the form area states: "To switch to owning your new home, set Rent to zero".

Interestingly enough, this move actually lowers Joe's and Sally's living standard. Their recommended 2003 consumption declines from \$50,120 to \$46,312. The reason is that paying \$2000 per month in rent for 35 years more than eats up the equity they pull out of their home by selling their home. So, even though Joe and Sally thought they were downsizing, they actually ended up upsizing with respect to

overall long-term housing expenditures. The housing report, copied below, shows what happens to their housing expenditures from this move.

## The Impact on Joe and Sally of “Downsizing” their Home

Microsoft Excel - Whitney\_Basic Profile\_Detailed\_report2461

File Edit View Insert Format Tools Data Window Help

AF58

|    | A    | B         | C           | D                      | E        | F            | G                          | H                     | I                  | J                    | K                | L           |
|----|------|-----------|-------------|------------------------|----------|--------------|----------------------------|-----------------------|--------------------|----------------------|------------------|-------------|
| 1  | Year | Joe's Age | Sally's Age | Housing                |          |              |                            |                       |                    |                      |                  |             |
| 2  |      |           |             | Rent & Rental Expenses | Mortgage | Property Tax | Maintenance and Condo Fees | Homeowner's Insurance | Net Home Purchases | Housing Expenditures | Mortgage Balance | Home Equity |
| 24 | 2024 | 54        | 49          | 0                      | 0        | 3,000        | 0                          | 2,500                 | 0                  | 5,500                | 0                | 300,000     |
| 25 | 2025 | 55        | 50          | 0                      | 0        | 3,000        | 0                          | 2,500                 | 0                  | 5,500                | 0                | 300,000     |
| 26 | 2026 | 56        | 51          | 0                      | 0        | 3,000        | 0                          | 2,500                 | 0                  | 5,500                | 0                | 300,000     |
| 27 | 2027 | 57        | 52          | 0                      | 0        | 3,000        | 0                          | 2,500                 | 0                  | 5,500                | 0                | 300,000     |
| 28 | 2028 | 58        | 53          | 0                      | 0        | 3,000        | 0                          | 2,500                 | 0                  | 5,500                | 0                | 300,000     |
| 29 | 2029 | 59        | 54          | 0                      | 0        | 3,000        | 0                          | 2,500                 | 0                  | 5,500                | 0                | 300,000     |
| 30 | 2030 | 60        | 55          | 0                      | 0        | 3,000        | 0                          | 2,500                 | 0                  | 5,500                | 0                | 300,000     |
| 31 | 2031 | 61        | 56          | 0                      | 0        | 3,000        | 0                          | 2,500                 | 0                  | 5,500                | 0                | 300,000     |
| 32 | 2032 | 62        | 57          | 0                      | 0        | 3,000        | 0                          | 2,500                 | 0                  | 5,500                | 0                | 300,000     |
| 33 | 2033 | 63        | 58          | 0                      | 0        | 3,000        | 0                          | 2,500                 | 0                  | 5,500                | 0                | 300,000     |
| 34 | 2034 | 64        | 59          | 0                      | 0        | 3,000        | 0                          | 2,500                 | 0                  | 5,500                | 0                | 300,000     |
| 35 | 2035 | 65        | 60          | 0                      | 0        | 3,000        | 0                          | 2,500                 | 282,000            | (276,500)            | 0                | 0           |
| 36 | 2036 | 66        | 61          | 24,000                 | 0        | 0            | 0                          | 0                     | 0                  | 24,000               | 0                | 0           |
| 37 | 2037 | 67        | 62          | 24,000                 | 0        | 0            | 0                          | 0                     | 0                  | 24,000               | 0                | 0           |
| 38 | 2038 | 68        | 63          | 24,000                 | 0        | 0            | 0                          | 0                     | 0                  | 24,000               | 0                | 0           |
| 39 | 2039 | 69        | 64          | 24,000                 | 0        | 0            | 0                          | 0                     | 0                  | 24,000               | 0                | 0           |
| 40 | 2040 | 70        | 65          | 24,000                 | 0        | 0            | 0                          | 0                     | 0                  | 24,000               | 0                | 0           |
| 41 | 2041 | 71        | 66          | 24,000                 | 0        | 0            | 0                          | 0                     | 0                  | 24,000               | 0                | 0           |
| 42 | 2042 | 72        | 67          | 24,000                 | 0        | 0            | 0                          | 0                     | 0                  | 24,000               | 0                | 0           |

Ready

### Joe and Sally Run Monte Carlo Simulations

The next three screen shots help you understand how to run Monte Carlo simulations assuming you have a) purchased *ESPlannerPlus* and b) activated Monte Carlo on the Family Information screen.

The program's Monte Carlo calculations begin with a dynamic program that determines how much the household should consume each period given all the different levels of regular and retirement account assets it could possibly have in that period. This dynamic program takes into account that higher (lower) regular and retirement account asset levels mean higher (lower) taxes (depending on the year in question).

The dynamic program assumes that households, at any point in time, will base their consumption decision on *ESPlanner's* recommendation. Once this set of *consumption functions* (one for each future period) is generated, the program randomly selects 500 time paths of annual asset returns. Each time path of returns

is then used in conjunction with the family's portfolio choices to figure out what rate of return the household will earn each period on its regular and retirement account portfolios.

For each of the 500 time paths of portfolio returns, the Monte Carlo simulations begin by using the household's initial regular and retirement account asset levels (the initial *state variables*) to determine, based on the initial period consumption function, how much the household should consume in that period. This decision, in turn, determines how much the household saves and, given the portfolio returns, how much regular and retirement account assets the household will have at the beginning of the second period. These second-period asset levels are then inputted into the second-period consumption function to determine second-period consumption, and so on. The simulation proceeds in this manner through the last period a household member could be alive.

In the process of calculating the entire time path or *trajectory* of consumption associated with each of the 500 time paths of randomly drawn returns, we also determine the associated time paths of retirement and regular asset levels, income levels, saving levels, etc. After each of the 500 trajectories of all variables has been determined, we do two things. First, we show the percentile distribution of outcomes for the household's living standard, income, and asset levels in each future year. Second, we rank the 500 trajectories based on the present value of consumption and display the trajectories for the household's living standard, income, and asset positions associated with the fifth lowest, 25<sup>th</sup> lowest, 50<sup>th</sup> lowest, 75<sup>th</sup> lowest, and 95<sup>th</sup> lowest present values of consumption. We refer to these as lowest, low, middle, high, and highest trajectories.

In the following two screen shots we assume that Joe and Sally have a favorite stock, XYZ Corp., and show you how to enter that asset in the first, *Build Portfolio*, screen of the Monte Carlo folder. In the second of these two screen shots, we renamed Portfolio 2 as "Hot Tip," we removed the non-cash assets from the Hot Tip portfolio, and then selected XYZ Corp. from the asset grid. Next, we set the asset percentage at 50 percent, and then used the *Add* button to add XYZ Corp. to the Hot Tip portfolio. Then we selected large cap stocks and added 50 percent holdings of that asset as well to the Hot Tip portfolio.

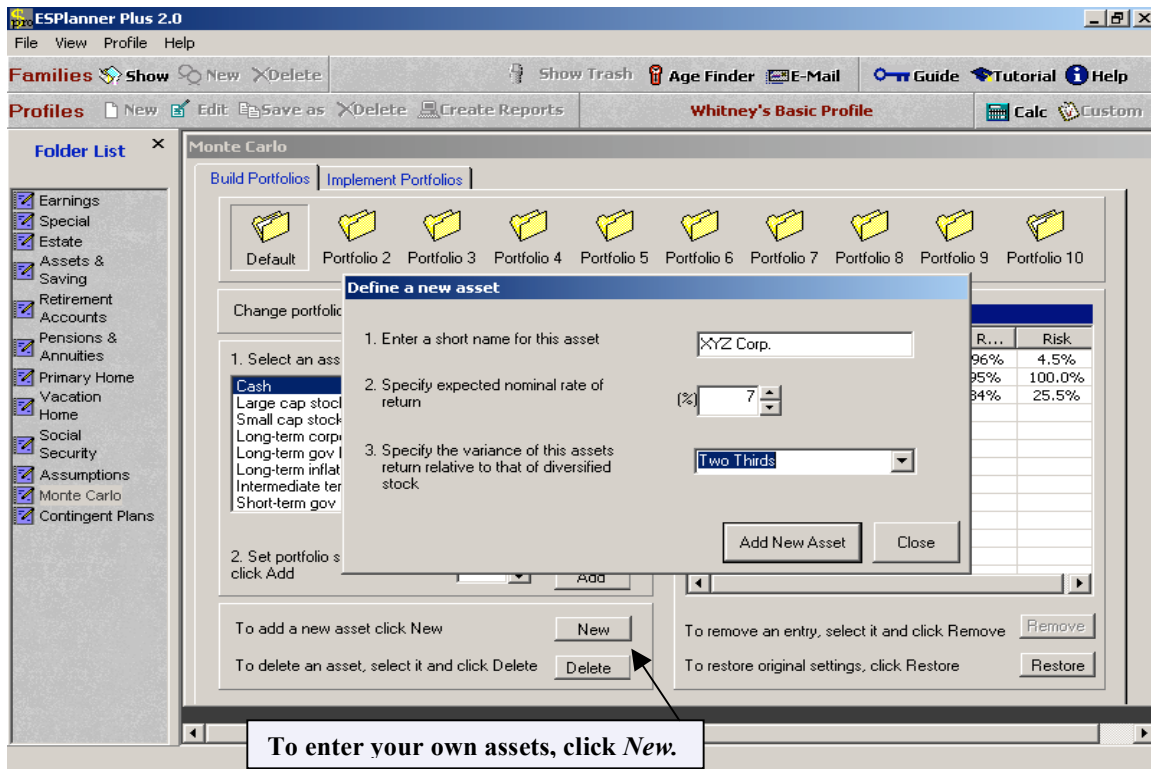
We next renamed Portfolios 3 and 4 to "Play It Safe" and "U.S. Stocks" and then used the *Remove* and *Add* buttons to define those portfolios as consisting, respectively, of 100 percent inflation-indexed bonds and 100 percent in large cap U.S. equity. Finally, as the next screen shot shows, we told the program that through 2040 the couple wants to a) hold only its Hot Tip portfolio when it comes to its regular assets, b) hold only its Play It Safe portfolio in Joe's retirement account and c) hold its U.S. Stocks portfolio in Sally's retirement accounts for 10 years and then switch to Play It Safe. After 2040, the couple wants to hold only the Play It Safe portfolio.

The next three screen shots show examples of the Monte Carlo reports. In this run, we've given Joe and Sally \$50,000 in initial retirement account assets and assumed no future contributions. The first of the

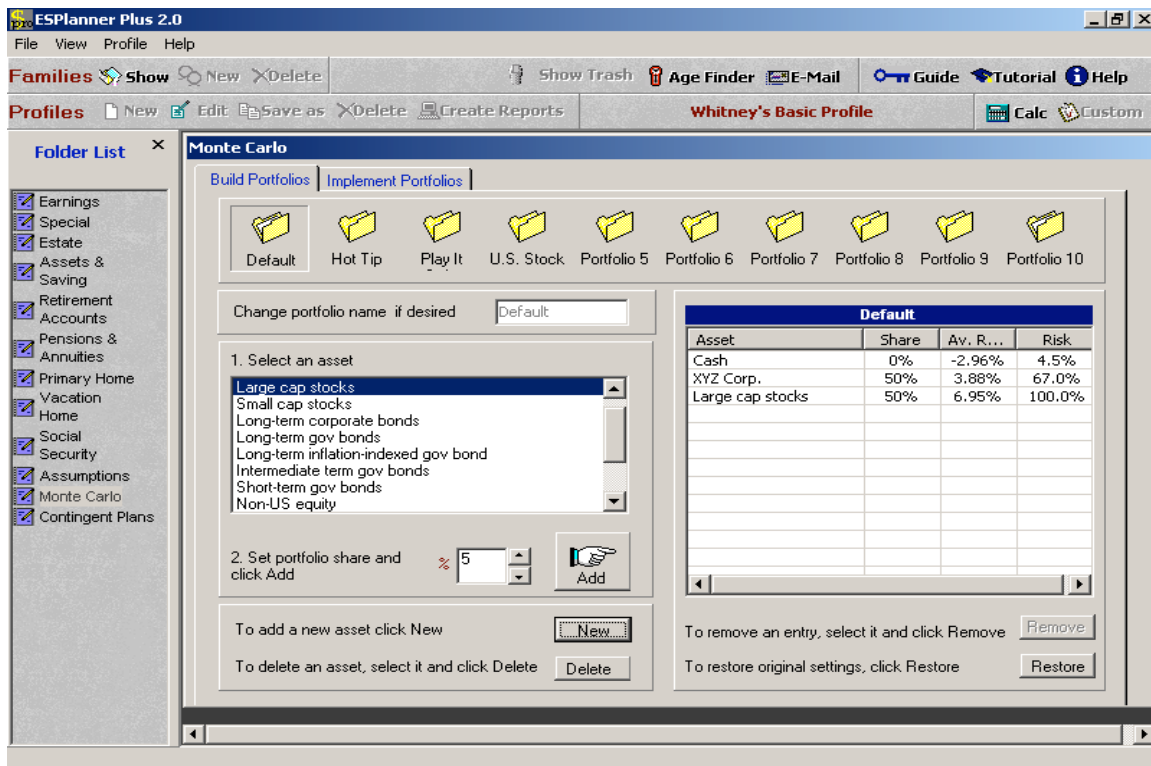
three screen shots show the percentile distribution of the couple's living standard each year as they age. The second shows very low, low, middle, high, and very high trajectories of the couple's total income. The third shows a tabular display of the percentile distribution of the couple's regular assets.

Once you consider these results, you may want to adjust your portfolio decisions. Note that in the case we present, once Joe and Sally switch in 2040 to the Play It Safe portfolio, their income trajectories show no variability from one period to the next. This illustrates that the program can be used to deliver different degrees of income, asset, and living standard variability when young and when old.

## Entering Joe's and Sally's Own Asset



## Establishing a Portfolio with 100 Percent XYZ Corp.



## Implementing Joe's and Sally's Portfolios

**ESPlanner Plus 2.0**

File View Profile Help

**Families** Show New XDelete Show Trash Age Finder E-Mail Guide Tutorial Help

**Profiles** New Edit Save as XDelete Create Reports **Whitney's Basic Profile** Calc Custom

**Folder List**

- Earnings
- Special
- Estate
- Assets & Saving
- Retirement Accounts
- Pensions & Annuities
- Primary Home
- Vacation Home
- Social Security
- Assumptions
- Monte Carlo
- Contingent Plans

**Monte Carlo**

Build Portfolios Implement Portfolios

1. Select

☐ Regular Assets

☐ Joe's Retirement Account

☒ Sally's Retirement Account

2. Choose a portfolio from the list

**Portfolios**

- Default
- Hot Tip
- Play It Safe
- U.S. Stock
- Portfolio 5
- Portfolio 6
- Portfolio 7
- Portfolio 8
- Portfolio 9
- Portfolio 10

3. Specify the years you'll hold the selected portfolio

First year 2008

Last Year 2063

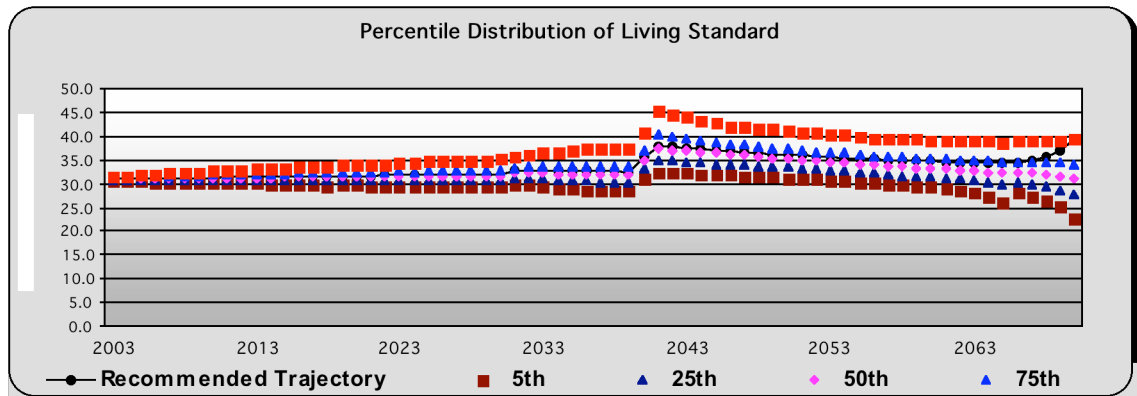
**Portfolio Choice**

| Year | Regular Assets | Sally's Retirement Account | Joe's Retirement Account |
|------|----------------|----------------------------|--------------------------|
| 2003 | Hot Tip        | U.S. Stock                 | Play It Safe             |
| 2004 | Hot Tip        | U.S. Stock                 | Play It Safe             |
| 2005 | Hot Tip        | U.S. Stock                 | Play It Safe             |
| 2006 | Hot Tip        | U.S. Stock                 | Play It Safe             |
| 2007 | Hot Tip        | U.S. Stock                 | Play It Safe             |
| 2008 | Hot Tip        | Play It Safe               | Play It Safe             |
| 2009 | Hot Tip        | Play It Safe               | Play It Safe             |
| 2010 | Hot Tip        | Play It Safe               | Play It Safe             |
| 2011 | Hot Tip        | Play It Safe               | Play It Safe             |
| 2012 | Hot Tip        | Play It Safe               | Play It Safe             |
| 2013 | Hot Tip        | Play It Safe               | Play It Safe             |
| 2014 | Hot Tip        | Play It Safe               | Play It Safe             |
| 2015 | Hot Tip        | Play It Safe               | Play It Safe             |

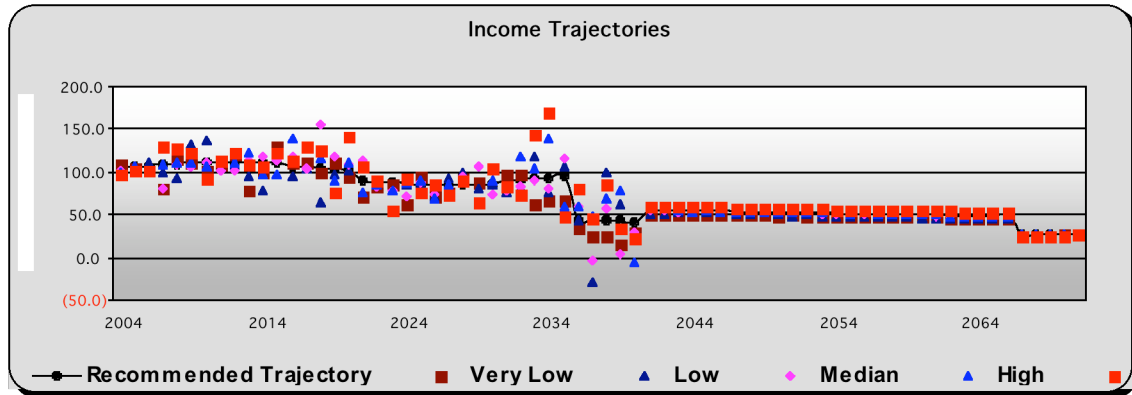
Set Allocation

Clear Grid

## The Annual Variability in Joe's and Sally's Living Standard



## Illustrating Alternative Income Trajectories



## The Percentile Distribution of Joe's and Sally's Regular Assets

Microsoft Excel - Whitney\_Basic Profile\_MonteCarlo\_report2461

| Percentile Distribution of Regular Assets |           |             |                        |         |         |         |         |         |  |
|-------------------------------------------|-----------|-------------|------------------------|---------|---------|---------|---------|---------|--|
| Year                                      | Joe's Age | Sally's Age | Recommended Trajectory | 5th     | 25th    | 50th    | 75th    | 95th    |  |
| 2,003                                     | 33        | 28          | 118,688                | 104,605 | 111,975 | 116,393 | 122,068 | 129,468 |  |
| 2,004                                     | 34        | 29          | 135,993                | 115,682 | 125,339 | 132,256 | 140,827 | 152,702 |  |
| 2,005                                     | 35        | 30          | 144,477                | 118,907 | 130,623 | 138,808 | 150,375 | 166,773 |  |
| 2,006                                     | 36        | 31          | 154,293                | 120,788 | 136,101 | 147,614 | 160,375 | 179,231 |  |
| 2,007                                     | 37        | 32          | 165,465                | 123,455 | 145,471 | 157,735 | 171,239 | 193,186 |  |
| 2,008                                     | 38        | 33          | 178,069                | 136,377 | 155,330 | 169,785 | 186,543 | 212,224 |  |
| 2,009                                     | 39        | 34          | 192,120                | 146,597 | 165,757 | 182,473 | 199,992 | 229,247 |  |
| 2,010                                     | 40        | 35          | 206,876                | 159,901 | 179,538 | 196,201 | 216,304 | 253,683 |  |
| 2,011                                     | 41        | 36          | 220,883                | 169,057 | 191,991 | 209,431 | 233,754 | 274,249 |  |
| 2,012                                     | 42        | 37          | 235,453                | 180,363 | 202,806 | 224,429 | 249,170 | 288,668 |  |
| 2,013                                     | 43        | 38          | 250,564                | 191,699 | 216,504 | 238,361 | 264,734 | 308,208 |  |
| 2,014                                     | 44        | 39          | 266,188                | 199,995 | 223,905 | 251,825 | 283,004 | 329,194 |  |
| 2,015                                     | 45        | 40          | 276,574                | 203,687 | 235,659 | 260,737 | 297,259 | 347,463 |  |
| 2,016                                     | 46        | 41          | 287,125                | 209,865 | 244,096 | 272,459 | 308,891 | 365,659 |  |
| 2,017                                     | 47        | 42          | 273,680                | 190,501 | 228,355 | 257,484 | 299,489 | 356,526 |  |
| 2,018                                     | 48        | 43          | 258,056                | 168,350 | 211,324 | 241,372 | 281,911 | 341,408 |  |
| 2,019                                     | 49        | 44          | 241,669                | 149,836 | 191,641 | 226,530 | 267,709 | 339,001 |  |
| 2,020                                     | 50        | 45          | 212,327                | 119,150 | 160,200 | 193,687 | 237,608 | 311,155 |  |
| 2,021                                     | 51        | 46          | 216,933                | 118,385 | 163,090 | 196,914 | 241,354 | 311,807 |  |

Ready