Developments in Business Simulation and Experiential Learning, Volume 29, 2002

IT'S A WONDERFUL LIFE: SIMULATING THE GOLDEN YEARS

Howard, Barbara J.
SUNY Geneseo
howardb@geneseo.edu

Markulis, Peter M.
SUNY Geneseo
markulis@geneseo.edu

Strang, Daniel R.
SUNY Geneseo
strang@geneseo.edu

ABSTRACT

Demographic trends indicate that the fastest growing segment of the population is the 65+ age cohort. The populations of developed countries are aging and this trend is expected to accelerate. This means that most of us can expect to live longer and undoubtedly we will have to make key decisions affecting our lives much later in our chronological age than previously was the case. With the prospects of extended life, the aging population confronts many new and complex decisions about lifestyles. The authors have developed a model for a simulation that allows people, especially those in the "baby-boomer" generation, to anticipate and project these crucial life decisions before they have to 'live' them. The simulation will demonstrate the possible outcomes of their choices, aiding them in making better decisions.

INTRODUCTION

The average life expectancy has been steadily increasing, with the projected life expectancy of someone born in 2000 reaching 77 years old. (Census Bureau) With this increase in life expectancy, there is a commensurate increase in the population of older people. There are an estimated 34.9 million Americans 65 and over, or 1 in 8 people. This represents a 12% increase in this age group since 1990. Additionally, the median age of the US population is 35.3 years; the highest ever reported (Census Bureau).

This demographic trend is expected to continue for some time as the "baby boomers" reach retirement age. This all means that we will probably live longer and undoubtedly will have to make key life-influencing decisions at a later chronological age than previously was the case. An inevitable decision with which we all have to wrestle is - how do we prepare ourselves for these decisions?

Associated with an increase in the life expectancy is an increased need to analytically address the demands (options) of extended life. With the prospects of living longer, this aging population confronts many new, and complex, decisions about lifestyles. The authors have developed a model for a simulation that allows people, especially those in the "baby-boomer" generation, to anticipate and project these crucial *life* decisions before they have to live them (and as a consequence, pay for bad decisions). The simulation will demonstrate the possible outcomes of their choices, which will aid them in making better decisions.

LITERATURE REVIEW

One of the initial reasons for starting ABSEL was to bring together writers and users of computerized simulations. Another goal was the promotion of computerized simulations, particularly in the area of business education. For the most part, these goals have been reached. Many in ABSEL are now ruminating about future directions and roles for computerized simulations. They ask: "Where do we go from here?" Is the era of developing and using computerized simulations, along with their promotion *passé*? Perhaps not. A review of the ABSEL literature reveals that most simulations described or critiqued by ABSEL scholars have been developed to simulate real-world business-related situations. The common fiber of each of these simulations is that they can be broadly defined as business simulations, although they may actually focus on a specific sub-discipline under the broad umbrella of business. Our review of the ABSEL literature pertaining to simulations found that none of the simulations actually tried to simulate the financial ramifications of life's decisions, particularly in the context

of an aging population. (See references) A review of the ABSEL literature indicates over 15 computer simulations addressed the strategy/policy area and a similar number dealt with the marketing, advertising, and sales areas. The stock market and banking industry have been the focal points for a number of simulations, as have labor relations/negotiation, micro and macro economics, operations management, logistics, quality control, and a generic service industry. All of these simulations were developed to help "teach" students by immersing them in some facet of real world business. Yet the authors found no simulations reported in ABSEL which attempt to teach or prepare students to cope with "life" itself.

TARGET MARKET

The primary objective of this simulation is to provide a structure for individuals who are confronting, or should be confronting, the myriad of decisions that we all potentially face as we approach our "golden years." Shortly after receiving the first AARP membership solicitation, it is natural to start asking a series of questions - the first of these, should I join this organization since it only costs me $10? But more importantly the solicitation alerts us to the fact that we are entering a new demographic cohort and that raises all sorts of questions; questions we thought were only the realm of our parents or grandparents. Questions such as:

- Have I provided for my descendents?
- Where will I live and how will I live?
- Have I provided for myself?
- Should I sell my home and move south?
- Should I semi-retire at 65 and look for a part time job?
- How should I organize my household so I can handle it in 10 or 20 years?

The potential target market for this type of simulation is **these** people, when they start to ask **those** questions. A second target market is facilitators (that translates into highly paid consultants) whose role is to assist and advise this group of people as they work through the complex set of new decisions they will shortly face.

As the authors discussed several aspects of the simulation with finance professionals (CFG, interview) an additional target market became apparent - financial planners. The simulation could serve as a mechanism to focus attention on issues and raise questions as they work with their clients. The results of the simulation play will give planners insights into a client's investment personality and attitude toward risk, providing a better basis for making some very important decisions.

As always, ABSEL authors look for ways to enhance the learning environment. Without question, this simulation will be an excellent tool for Personal Finance classes at the college level. It could also be used effectively in an Organizational Behavior course or Business & Society course. While it may be too soon for many of the traditional college-aged students to simulate their own retirement years, the simulation may nonetheless serve to lay the foundation for decisions which they will make in future years. In that sense, their simulation experience can be referenced at some future point in time. Students that pursue a career in the financial planning industry could also use it as a planning and forecasting tool.

THE MODEL

This simulation is designed to be played by an individual player over a period of time. It is primarily targeted for individuals over 50 years of age, but could still be informative if played by individuals younger than 50. The individual playing the game will be confronted with real-world decisions that simulate the player's life from the point that the player starts playing the game until the player is deceased and the estate is settled. Although a player could conceivably play for a number of simulated years in one session, it is expected, and probably more beneficial, if the player spreads the decisions over a series of sessions. The obvious advantage that a series of sessions offers is the ability to gather information and make more enlightened decisions**.** Additionally, the simulation itself will serve as a source of information and direction for the players as they work through the decisions.

To begin the simulation a player must input a significant amount of information. These input data serve as the basis for the chance events that control the simulated results. Each chance event is subject to a probability distribution that is, to the extent possible, a representation of real-world probabilities. The probabilities are dynamic and are modified based upon significant changes that arise as the player progresses through the simulation. The input data includes the following demographic and situational data as well as key lifestyle factors:

Demographic and Situational Data

Current age of all members of the immediate family
Gender of all members of the immediate family
Medical history of all members of the immediate family
Current marital status and previous marriage history
Education of all members of the immediate family
Current occupation and annual salary of each immediate family member
Current assets and liabilities of player
Geographic location of player
Current housing of family members.

Lifestyle Factors

Does the player smoke? Drink? Use illegal drugs?
What is the player's typical diet?
How many miles does the player commute to work? Do they wear a seatbelt - do they speed?
Does the player exercise regularly?
Does the player regularly engage in risky activities?

The player will initially establish an objective function and assign relative priorities to the components of the objective function. For example the player will set priorities in terms of outcomes such as their financial well-being, as well as that of other family members (i.e. children's educational support, helping their children purchase their first home, financial support for parents and/or grandchildren, etc.); housing circumstances (i.e. home ownership, second/retirement home ownership, nursing home, condominium); development of an estate; and health profile. The objective function is subject to change based upon the conditions that arise throughout the simulation play as well as resulting changes in attitude by the player.

SIMULATION PLAY

The play progresses on a timeline starting from the player's current age and moving through a series of periods until the player is deceased and the estate is distributed. Typically, a menu of decisions is offered on an annual basis. The exception to this general rule arises when major lifestyle-altering events occur (e.g. significant "health event" for a family member, a significant change in occupation, etc.). At this juncture, a *contextual list* of decision options is presented. To illustrate this point, if a player encounters a period of cash deficit and as a consequence needs to liquidate something, the player may choose to redeem part or all of a traditional IRA and perhaps incur a penalty provided the player had established an IRA previously **or** the player may choose to borrow from a life insurance policy if the player had purchased one **or** the player may sell stocks if there are stocks in the player's portfolio **or** the player may draw down a savings account provided the player has an account with a sufficient balance. The decisions that are available are determined by past decisions made by the player. In many instances, the results and issues that arise are controlled by the initial factors, the evolution of the factors, the decisions from both recent and earlier periods of play, and chance events. Chance events arise based upon contextual probability distributions built into the model and random drawings.

REPORTS AND RESULTS

The player is presented with a ***state of you*** report regularly (at least once a game year). At the incidence of a life-altering event a *state of you* report is also generated.

Historic records for a number of key indicators will be maintained, can be accessed, and can be displayed in longitudinal graphs. The key indicators maintained will be not only economic factors such as net worth, debt, performance of the components of the player's portfolio, but many non-economic factors such as cholesterol level, blood pressure, as well as other measures of well-being.

THE BENEFITS OF THE SIMULATION

There are many potential benefits of the simulation. Not the least of which is that a person over 50 who might otherwise procrastinate in making important decisions can see dramatically the impact of procrastination. In addition, the simulation will present its players with a list of decisions that should be considered. As we go through life, we all occasionally ask ourselves the question - Is there something that I should be considering now, that if I don't consider, I might regret at some time in the future? The list of these issues is extensive but would certainly include an insurance policy that provides for long term care, creation of a trust, investing in a traditional or Roth IRA, a decision to invest in retirement housing, etc. The simulation will force the player to make a *simulated* decision on a wide number of these vital issues. As crises arise in real life, we all find ourselves trying to cope by making decisions on the fly and, unfortunately, sometimes making decisions using *seat of the pants* heuristics. By fabricating these decision points, the simulation offers its players the opportunity to have practiced, and perhaps to have developed decision models that can be applied to address future situations or even to avert a crisis situation.

To demonstrate some of the benefits that the simulation offers its players, consider the following examples.

A player is trying to determine the best way to save for retirement and is torn between investing in a Roth IRA and a traditional IRA. With a traditional IRA, the IRS allows some people to deduct their contributions from current income and defer the taxes on any accumulations until withdrawal. With a Roth account, the income is taxed in the contribution year, but all accumulations are tax exempt upon withdrawal (as long as certain restrictions are met). The decision centers on the current marginal tax rate versus the marginal tax rate at retirement. The simulation will prompt the player to provide certain input data that will bear upon the IRA decision such as the player's current retirement investments, current salary, current tax bracket, and whether the player was covered by an employer retirement plan. Based on the responses to these questions, eligibility for a deductible IRA would be determined. (Incidentally, although this is a byproduct of the simulation, the determination of eligibility itself has value for the player.)

The player's options at this point in time will be presented in a menu of choices and projected results will be presented in the classic "what-if" format. The player then will make a decision and the simulation will progress. At a later point in the simulation, the player will be given the opportunity to assess the efficacy of the decision made using a "regrets" framework.

The best functional icon for most software packages (i.e. Microsoft Word, Excel, etc.) is the UNDO function. It has been argued that life should have an UNDO function. But while we cannot control life in that way, we can control the simulation. The simulation allows a person to make a decision, realize the consequences, recognize the

unfortunate nature of the decision (if it is unfortunate), and consequently UNDO it. The simulation will provide the opportunity for the player to begin again. Since the play of the simulation will be stochastic, multiple replays might be very instructive.

Another major decision faced by the player is long-term health care. There are a myriad of factors that enter into the selection of long-term healthcare insurance. They include the age and health of the purchaser (these help determine the cost) and the type of coverage (the options include institutional care, home care, and combinations of the two). Many elderly people need some type of assistance but don't want to leave their own home. Others look forward to living with people their own age and some people have health problems that require around the clock medical care. The simulation will play through several possible scenarios that would combine the history of the player with the possibilities of future events that would affect the options. The financial impact on the player and her estate will be part of the state of you report generated by the simulation. Again, multiple replays may be very informative for the player.

Along the same line are the "health habits" of each individual. The player's diet, exercise, and lifestyle all have an impact on her longevity and consequently her financial needs. The simulation will assess the healthiness of the player, which will not only serve to point out the possible health benefits and risks, but will also serve as input into the other areas of the simulation. For instance, knowing that the player is a smoker and pointing out this health risk may have an impact on her decision to quit. But it will also factor into the probability that the player may have a shorter life and higher medical needs than a non-smoking player.

COMPLEMENTARY BENEFITS

An ancillary benefit of the simulation is that it will provide the player with a number of portals (such as websites) as key resources that could be of benefit to people over 50. These resources will be useful in the simulation play and at the same time can be used in real life.

An Internet search revealed that many of the subcomponents of the model proposed are available through a variety of websites. Many of the financial aspects of the simulation can be found at websites of financial service firms. However, many of them are proprietary in nature, allowing access only to the firm's planners and sometimes their clients. But there are some sites that allow the general public to use all or some of their tools. For instance Americanexpress.com has a number of foundation tools that include retirement planning and investment basics. Financeware.com allows visitors to use their retirement wizard, which allows users to complete a "back test" that helps determine if they are saving enough money for their desired retirement. Motley's Fool (www.fool.com) provides several types of investment advice and is instructive in several aspects of portfolio management. Quicken (www.quicken.com/retirement) has an IRA planner that walks through many of the aspects discussed before. Moneychimp (www.datachimp.com) provides a number of articles about a variety of issues, including the Roth IRA. It is our analysis, however, that many of these simulators are overly simplistic in their design. Most of them require the user to make many of the decisions regarding environmental factors such as interest rate and inflation assumptions, as well as age of retirement and length of retirement, without providing the user with sufficient background. The majority of the "players" would not have the basic knowledge necessary to make these decisions in a realistic manner. As simulation designers, we are well aware that it makes more sense to use a range of possible outcomes rather than a single number.

In addition to the many financial simulations, there are also Internet sites that allow the user to look at other aspects of their well being. For example, Realage.com takes the user through a questionnaire, either a simple one or a more detailed one, which helps determine the user's health age versus their chronological age. The questions deal with exercise, eating habits, lifestyle choices such as smoking, drinking, and seat belt usage. As the user enters answers to each of the questions, a health age is computed and displayed at the top of the website. Other informative websites, although not interactive, address the issue of long term health care including www.longterminsurance.org and www.longtermcarewiz.com. This type of site explains many of the insurance options that are available and answers some frequently asked questions for the site visitor. These sites also provide links to authorized firms that can provide insurance quotes.

CONCLUSION

In a typical business simulation, a student (or student team) who does not do particularly well at the end of the game receives a lower grade than the other students or student teams. This bad outcome or consequence is somewhat assuaged by the instructor telling the student or team that they "learned a lot" by just playing the game. As instructors, we believe that there is a certain "value-added" to the student's learning by just 'playing the game.' But what if the consequences were more salient than simply a *bad grade*. What if the consequences were *life altering*?

The authors have presented a model that allows people, especially those in the "baby-boomer" generation, to anticipate and project crucial *life* decisions before they have to live them. The value of such projection is that users will be able to "foresee" the future consequences of present decisions. In this case, it is particularly important because today's decisions have life-altering consequences for the player's own future. The authors believe that such a simulation will not only have a broad appeal, but will also be of interest to ABSEL practitioners, who might use such a simulation in a Personal Finance course, an Introduction to

Management course, a Business & Society course, or an Organizational Behavior course.

REFERENCES

Axe, Harry S. (1989). A Stimulating Simulation in International Business Negotiations with a Japanese Economy. *Developments in Business Simulation & Experiential Exercises, 16,* 41-45.

Bacon, Donald R. and James S. Pike. (1993). Shelf Wars: A Grocery Channel Simulation. *Developments in Business Simulation & Experiential Exercises, 20*, 4-6.

Barton, Richard F. (1984). A Simulation Game Model for Conglomerates. *Developments in Business Simulation & Experiential Exercises, 11*, 189.

Baughman, Roland D. (1991). Collective Bargaining Simulation: An Exercise Based on a Familiar Theme. *Developments in Business Simulation & Experiential Exercises, 18*, 130.

Bissada, Y. F. and Gundar J. King. (1984). The Ex-stra Export Strategy Game. *Developments in Business Simulation & Experiential Learning, 11*, 45.

Breinholt, Robert H., Susan A. Chesteen and Fred W. Cooper. (1992). The Device Business: A Management Simulation for Strategy Formulation. *Developments in Business Simulation & Experiential Exercises, 19*, 21-25.

Brozik, Dallas and Alina Zapulska. (2000). The Restaurant Game. *Developments in Business Simulation & Experiential Exercises, 27*, 50-56.

Burlingame, Donald and Thomas Pray. (1983). COMPSIM: A Computer Center Management Simulation. *Developments in Business Simulation & Experiential Exercises, 10*, 107.

Burns, Alvin C. and Dan L. Sherrell. (1982). A Microcomputer Simulation for Teaching Retail Location Strategy. *Developments in Business Simulation & Experiential Exercises, 9*, 269.

Cabaniss, Roy F. and Mike Williams. (1991). The Political Futures Game. *Developments in Business Simulation & Experiential Exercises, 18*, 159.

Chandrachai, Achara. (1990). Bankgame. *Developments in Business Simulation & Experiential Exercises, 17*, 180.

Cotter, Richard V. and David J. Fritzsche. (1994). The Business Policy Game. *Developments in Business Simulation & Experiential Exercises, 21*, 171-172.

Cretien, Paul D. (1992). Bankpro Commercial Bank Simulation. *Developments in Business Simulation & Experiential Exercises, 19*, 207-208.

Crossbridge Financial Group, personal interview with Elizabeth Thorley and Brooks Howard, September 7, 2001.

Day, Ralph L. (1986). A Sales Management Simulation for the PC: An Integrative Tool for Sales Management Courses. *Developments in Business Simulation & Experiential Exercises, 13*, 63-65.

Decker, Ronald, James LaBarre and Thomas Adler. (1987). The Exponential Logarithm as an Algorithm for Business Simulation. *Developments in Business Simulation & Experiential Exercises, 14*, 50-52.

Denton, D. Keith. (1992). The Service Trainer Simulation. *Developments in Business Simulation & Experiential Exercises, 19*, 49-50.

Dickinson, John A. and A.J. Faria. (1993). Sales Manager: A Simulation. *Developments in Business Simulation & Experiential Exercises, 20*, 50-53.

Dickinson, John A. and A.J. Faria. (1995). The Sales Management Simulation. *Developments in Business Simulation & Experiential Exercises, 22*, 145-146.

Faria, A.J. and John A. Dickinson. (1995) The Marketing Management Simulation. *Developments in Business Simulation & Experiential* Exercises, 22, 147.

Fisk, Jamie T., James W. Gentry and Raymond P. Fisk. (1985). Airways: A Microcomputer Simulation of a Service Industry. *Developments in Business Simulation & Experiential Exercises, 12,* 127.

Frazer, J. Ronald. (1983). Bankrupt: A Deceptively Simple Business Strategy Game. *Developments in Business Simulation & Experiential Exercises, 10*, 98.

Frazer, J. Ronald. (1982). Realism and Learning: The Evolution of a Management Game. *Developments in Business Simulation & Experiential Exercises, 9,* 188.

Fritzsche, David J. and Dick Cotter. (1997). The Business Policy Game: An International Simulation- An Assessment Tool. *Developments in Business Simulation & Experiential Exercises, 24,* 25-30.

Gandhi, Nimish. (1993). Cadplan: A Simulation for Comparative Advertising. *Developments in Business Simulation & Experiential Exercises, 20*, 124.

Gautschi, Theodore F. The New Budget Game. *Developments in Business Simulation & Experiential Exercises, 18,* 22-26.

Gold, Steven C. and Harvey I. Gold. (1994). Astute Business Policy: A Simulation of the Automobile Industry. *Developments in Business Simulation & Experiential Exercises, 21,* 70.

Golden, Peggy A. (1986). Enterprise: A Multi-Purpose Management Simulation. *Developments in Business Simulation & Experiential Exercises, 13*, 155-156.

Groff, James E. (1989). A Game to Introduce Accounting Information Systems Students to Certain Internal Control Concepts. *Developments in Business Simulation & Experiential Exercises, 16*, 165-168.

Hamm, B. Curtis, Roy F. Cabaniss and Marion E. Deaton. (1990). International Currency Fluctuations: Money$im, A Simulation. *Developments in Business Simulation & Experiential Exercises, 17*, 84-87.

Haverty, John L. (1990). Superstore: A Specialized Retailing Simulation Within a Specialized Marketing Curriculum. *Developments in Business Simulation & Experiential Exercises, 17*, 88-91.

Jackson, George C. and Thomas McCleod. (1987). LTL1: A Trucking Simulation Game. *Developments in Business Simulation & Experiential Exercises, 14*, 102-103.

Koontz, Stephen R., Derrell S. Peel, James N. Trapp and Clement E. Ward. (1994). The Packer-Feeder Game: A Commodity Market Simulator. *Developments in Business Simulation & Experiential Exercises, 21*, 70-74.

Lebrenz, Gene. (1982). A Stock Market Invest for Simulation. *Developments in Business Simulation & Experiential Exercises, 9,* 1.

McDonald, Don M. (1997). International Exchange Game. *Developments in Business Simulation & Experiential Exercises, 24*, 42-43.

Neves, Joao S. (1992). The Quality Game. *Developments in Business Simulation & Experiential Exercises, 19*, 218.

Penderghast, Thomas F. (1994). Entrepreneurial Simulation Program. *Developments in*

Business Simulation & Experiential Exercises, 21, 192.

Pillutla, Sharma. (1994). An Interactive Simulation Game for Competitive Decision-Making. *Developments in Business Simulation & Experiential Exercises, 21*, 180.

Pray, Bevalee B. and Kenny Holt. (1995). Bulls and Bears: A Stock Market Simulation. *Developments in Business Simulation & Experiential Exercises, 22*, 140.

Romaguera, José M. (1983). The Advertising Agency Game: An Experiential Learning Exercise. *Developments in Business Simulation & Experiential Exercises, 10*, 39.

Schaffer, Robert W. (1999). The Marketing Game: A Marketing principles Simulation. *Developments in Business Simulation & Experiential Exercises, 26*, 223.

Smith, Jerald R. and Peggy A. Golden. (1987). Airline: A Strategic Management Simulation. *Developments in Business Simulation & Experiential Exercises, 14*, 192-193.

Snyder, Stephen J. (1995). A New Twist on an Old Game: The Business Strategy Game: A Global Industry Simulation. *Developments in Business Simulation & Experiential Exercises, 22*, 134-135.

Sord, Burnard H. (1982). A Merger and Acquisition Simulation. *Developments in Business Simulation & Experiential Exercises, 9*, 191.

Stevens, George E., and George W. Bohlander. (1982). Union VS. Management: A Simulation of Collective Bargaining in Action. *Developments in Business Simulation & Experiential Exercises, 9*, 105.

Teach, Richard. (1993). The Distribution Channel Game. *Developments in Business Simulation & Experiential Exercises, 20*, 139.

Thavikulwat, Precha. (1983). BOSS: A Behavioral-Quantitative, Computer-Supported Game. *Developments in Business Simulation & Experiential Exercises, 10*, 85.

Thorelli, Hans B. (1994). International Operations Simulation/Mark 2000 (Intopia). *Developments in Business Simulation & Experiential Exercises, 21*, 181-182.

Ward, Leo L. (1989). PAM (Planned Action Management) Simulation of a District Sales Territory. *Developments in Business Simulation & Experiential Exercises, 16*, 191-195.

www.census.gov/Press-Release/www/2001/ (2001). Census Bureau Facts for Features. U.S. Census Bureau.