

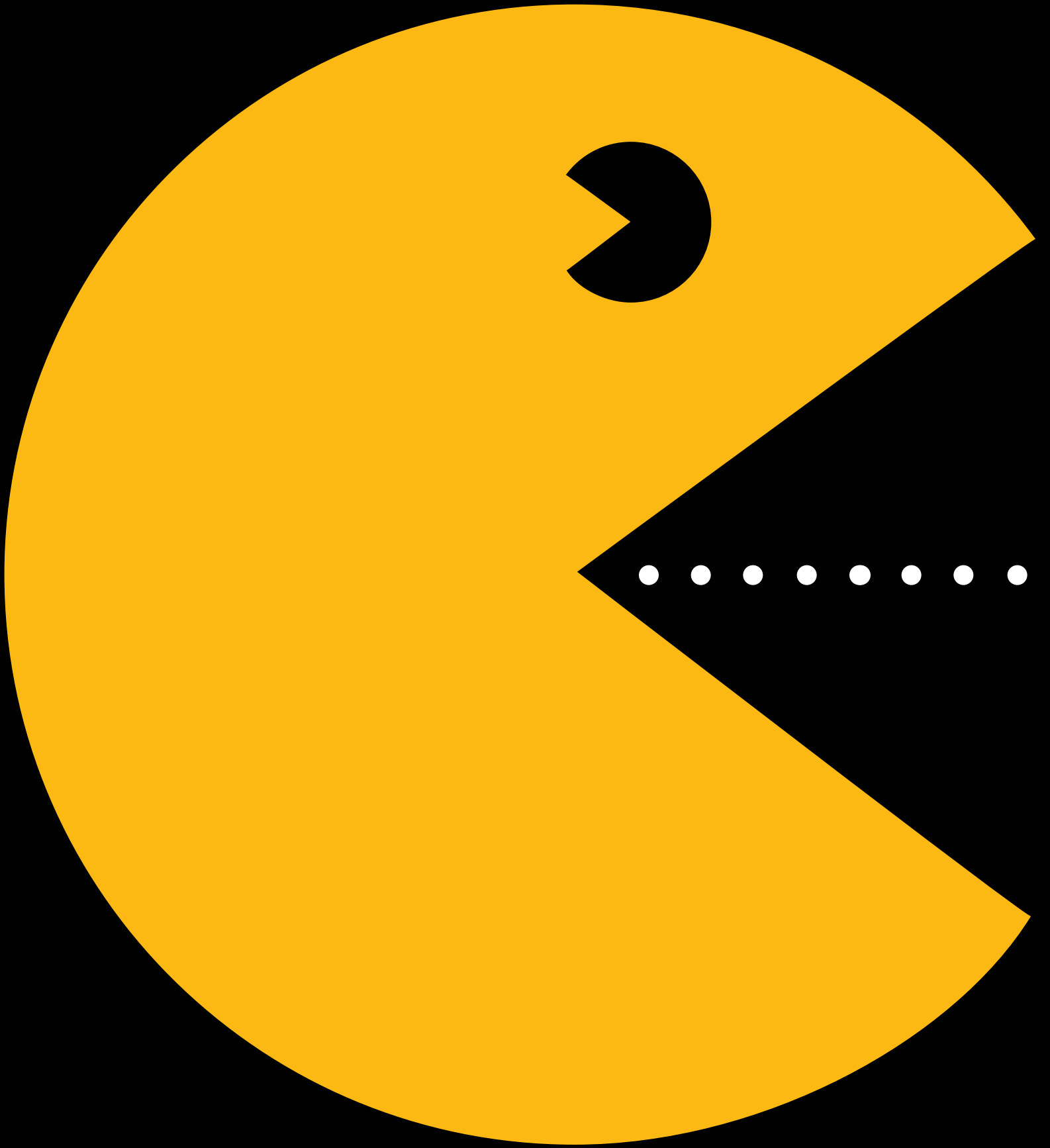


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RETIREMENT SOFTWARE

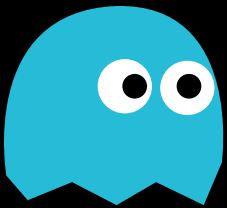
EAT DOTS

Avoid

GHOSTS

This article provides a summary of the full report "Retirement Planning Software and Post-Retirement Risks."

BY JOHN A. TURNER AND HAZEL A. WITTE



RECENT RESEARCH HAS FOUND THAT TODAY'S RETIREMENT SOFTWARE PROGRAMS LACK A LITTLE BYTE.

Retirement planning software packages used by consumers and financial professionals offer individuals the opportunity to do longer term planning far beyond what could be done without such tools. However, they

the Society of Actuaries, InFRE and LIMRA (Sondergeld, et al. 2003) served as a baseline. While we find improvements in the ease of use of programs (online Web interface, easy input screens) and use of Monte Carlo analysis to highlight risk, we also find that some of

We examined 12 nonrandomly selected retirement planning software programs. Five of the programs are available for free over the Internet (identified in the study as consumer programs). One program is available to consumers for a fee, and six programs are designed for use by financial planners for their clients (identified in the study as professional programs).

generally fall short in their objective to provide adequate analysis of post-retirement risks. This may be because of the difficulty of the issues involved. Software packages need to better address key planning drivers such as rates of return, life expectancy and the length of the planning period, Social Security benefits and age at which Social Security benefits are taken, housing, and survivor's benefits.

SOME HISTORY

Retirement planning software tools offer individuals and advisors the opportunity to perform a range of calculations to help them in retirement planning. Managing retirement income in the post-retirement period is challenging because there is a wide variety of potential risks. Approaches to managing these risks are often not integrated across risks.

We report here on a review of a selection of software programs commonly used by consumers and financial advisors from a study sponsored by the Society of Actuaries and The Actuarial Foundation (Turner and Witte 2009). That study assesses the extent to which retirement planning programs help users understand post-retirement risks. A path-breaking 2003 study sponsored by

the same issues and weaknesses identified in the 2003 study continue today. Some of the remaining problems may reflect a lack of consensus on how to deal with some issues, and some may reflect the difficulty of addressing some issues. Nonetheless, improvements can be made that would address these issues, as suggested in this article.

In 2008, the Society of Actuaries published *Managing Post-Retirement Risks: A Guide to Retirement Planning* that identifies risks, discusses their predictability and provides information on how they can be managed. It is important to note that often experts do not agree on how to manage specific risks. Two important conclusions from that study and other work help explain the results of this study:

- The issues are complex.
- Experts do not agree on the right solutions.

Therefore, it is not surprising that different software provide different results, and that there is a range of practice.

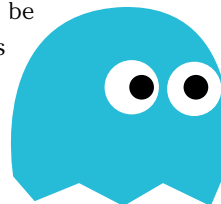
MAJOR FINDINGS

A common problem we found is that programs use rates of return that are too high, either due to program defaults or likely user error by unsophisticated users. When that is combined with user input for life expectancy, and the tendency of individuals to underestimate life expectancy, the result is understating the amount of resources need-

ed for retirement, particularly in consumer programs. Many programs do not recognize heterogeneity across users in life expectancy, and consequently programs may determine the length of the planning period using life expectancies that are too high for many individuals. Even at older ages, there are considerable differences in life expectancy across demographic groups.

Ongoing issues of financial planning software post-retirement include the following, some of which can be overcome with informed inputs, which are more likely in the use of professional programs:

1. Results and outputted information vary widely across programs.

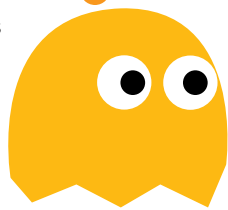


2. Consideration of the planning period and the handling of longevity risk vary considerably among the programs.
3. In terms of planning, there is often a pro-equity and pro-risk bias, particularly in consumer software.
4. Consumer software generally does not take into account the results of behavioral finance studies indicating that many users have a low level of knowledge about financial issues. For instance, certain studies suggest that individuals tend to overestimate rates of return and underestimate life expectancy, a combination that would lead to having inadequate resources in retirement when this information is provided by unsophisticated users.
5. The failure of programs to take into account fees on investments overstates net returns and may result in rates of



return that are generally not attainable.

6. Programs generally overstate gross rates of return received by individuals because individual investors tend to underperform the market due to the timing of their investments.
7. With the exception of financial market risks, most programs do a poor job of evaluating the risks that retirees face and, in fact, often obscure potential risks.



8. Most software programs inadequately estimate the level of Social Security benefits users are entitled to, and at the same time they do not direct users to the Social Security administration website, where they can obtain an accurate benefit estimate at no charge. The age at which So-

13. Programs, particularly consumer programs, should improve checking for input errors.

FURTHER OBSERVATIONS

Suitability Statements: Different people have different issues and considerations in retirement planning, and software that works

... GENERALLY THE SOFTWARE PROGRAMS DO NOT STATE FOR WHOM THEY ARE SUITABLE. ...

cial Security benefits are taken is an important decision for most people, and could be better addressed in most programs.

9. Software programs usually do not evaluate the possibility of annuitization (converting assets into lifetime income annuities) as an option to reduce risk, nor do they focus on different options for timing of payouts.
10. There is inconsistent treatment of housing as an asset for use in financing retirement consumption.
11. The programs generally do not take into account the risk of retiring earlier than expected, which is significant due to unexpected poor health of the worker or dependent or due

well for a specific situation will need to address the relevant issues. However, generally the software programs do not state for whom they are suitable, though some programs indicate that they are suitable for individuals with at least a stated minimum level of assets.

Problems with Extreme Events: The current financial crisis exposes weaknesses in financial planning software. The programs we examined generally are unable to analyze the risks of variable rate mortgages or large declines in housing prices. Extreme stock market declines seen recently are underrepresented in the Monte Carlo models. They do not consider the possibility of a large stock market and housing market decline occurring at the same time that a person nearing retirement has lost his or her

to job loss, compounded by the difficulty that older workers often have in finding new employment.

12. Programs generally need to better address the income needs of survivors and issues for couples.

job. In short, they underrepresent, or fail to represent, extreme events.

For users anticipating the possibility of these events, the software permits the running of what-if scenarios to investigate the effect of such events. The tools, however, should help



users identify risks, rather than relying on the sophistication of the user.

assistance in doing so, such as providing a longevity calculator based on age, gender, and health risks, may be the best approach.

Overall, rather than focusing on greater detail for issues that are not important to most individuals using the programs, we recommend that programs focus on better treatment of key inputs: longevity, rates of return, Social Security benefits,

One approach to dealing with the length of the planning period would provide information as to the adequacy of resources if death occurs at different ages. For example, in a deterministic framework the output could indicate that a particular in-

A COMMON PROBLEM WITH MANY OF THE PROGRAMS EXAMINED ... IS THAT THEY USE RATES OF RETURN THAT ARE TOO HIGH.

housing, and target consumption, including target consumption for survivors. The issues of importance will vary depending on the target population of the programs.

Longevity Risk and the Length of the Planning Period: There are large differences in the treatment of longevity risk and the planning period. While focusing on longevity is central to the length of the planning period, there is no agreement about the right way to handle longevity in terms of determining a planning period and inadequate focus on making assets last a lifetime. Most of the software did not analyze products and solutions making money last a lifetime, such as annuities.

Programs that set the length of the planning period the same for everyone do not recognize the large amount of heterogeneity in life expectancy across the population. However, programs that allow the user to choose the length of the planning period do not recognize the lack of knowledge among many users as to life expectancy. A program that allows the user to choose the length of the planning period but provides

dividual would have adequate resources if death occurred at age 80 but not if it occurred at age 90 or later. For a couple, the output could indicate that they had adequate resources if death of the surviving spouse occurred at age 90 or earlier but not at age 95 or later. This approach would require deterministic programs to automatically run scenarios with death occurring at ages 80, 90 and 95.

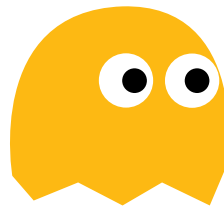
Rates of Return: A common problem with many of the programs examined, particularly consumer programs, is that they use rates of return that are too high, either due to user or program specifications. First, historical rates of return may be a poor guide for future rates of return, which may be lower. Second, market rates of return exceed the rates of return individuals receive due to investment fees they pay. Third, individuals tend to underperform the market because of errors they make in investing, such as selling

(or not buying) when the market is low and buying when it is high. Fourth, the rates of return used often do not take into account taxes. In some programs, this issue is dealt with by calculating taxes separately, while in others taxes are ignored. Fifth, other studies have shown that individuals tend to overestimate future investment returns. Sixth, it appears that most stochastic programs underrepresent the risk of large stock-market declines. Seventh, the deterministic programs generally do not reduce expected rates of return as a way of taking into account risk. In a deterministic setting, an expected rate of return of 10 percent is easily perceived as a risk-free rate of return of 10 percent.

The programs commonly advise users to consider increasing the risk in their portfolios if they face a financial shortfall, generally ignoring that the user would face an increased risk of market volatility and downside risk as well as upside potential.

While changing portfolios is often recommended, either because of an asset shortfall or because the portfolios are inconsistent with the user's self-reported risk aversion, the programs generally do not take into account the possible tax consequences of doing so with a taxable account, or even mention that as an issue to consider.

Social Security: The treatment of Social Security benefits generally could be improved. Several programs set the cost-of-living increase for Social Security benefits in payment at less than the inflation rate. This level of partial indexation is counter to the legal requirement that Social Security benefits be inflation-indexed.




Some programs calculate Social Security benefits based on the person's birth year, expected retirement age, and a single year of earnings. However, Social Security administrative records reveal many different pay patterns over the lifetime. For this reason, a model of pension outcomes that assumes all workers have a common earnings profile is unlikely to capture any user's Social Security benefits.

Instead, programs should

software opens up new vistas and makes better planning possible.

But developers of financial planning software face daunting challenges. First, the problem of creating a program that can address the wide range of issues individuals face is exceedingly complex. Second, on many of the key issues, such as the level of replacement rates, experts do not agree as to the appropriate advice. The financial planning soft-

possible outcomes and use that to inform their planning process. 

We have received valuable comments from Steven Siegel, ASA, Anna Rappaport, FSA, and members of the Program Oversight Group.

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integrate with the online calculator provided by the Social Security Administration, where users can calculate their Social Security benefits based on their own earnings record or at least advise users of the availability of the more precise estimate.

CONCLUSIONS

Long-term planning is both important and difficult for individuals. Financial planning

ware programs represent a huge amount of programming and design effort and in that sense are a remarkable achievement. They have the possibility of providing users better information about their financial future. At the same time, we see reason to expect that the programs will be greatly improved in the future. For example, all programs as outputs could automatically provide results for three life expectancies so that users could evaluate the range of

Reference

Sondergeld, Eric T.; Chamerda, Robert S.; Drinkwatter, Matthew; and Landsberg, Daniel G. 2003. "Retirement Planning Software." LIMRA International, Inc. and the Society of Actuaries, in collaboration with the International Foundation for Retirement Education.

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