Lifelong Retirement Income: The Zone Strategy

By Jim Otar, CMT, CFP, M.Eng.

One of the difficult decisions that must be made at the start of retirement is how to create lifelong income for your client. There are many choices: You can generate income from an investment portfolio, you can buy life annuities or you can try the variable annuities with guaranteed pay for a specified term.

How do you decide what strategy to follow, which product to use? What works for one client may be disastrous for another. First, you need to evaluate two critical factors: 1. A client's emotional capacity, and more importantly, 2. His financial capacity. Only after that can you decide what strategy to follow.

If a client's emotional capacity is high enough, he can invest in fluctuating portfolios. The degree to which a client can tolerate fluctuations can be one of the limiting factors in financing his retirement.

More importantly, you need to evaluate his financial capacity. Before you can talk about your client's dreams, before you can talk about the wisdom of asset allocation, before you can talk about investing large cap or small cap, before you can talk about investing in Canada or in China, you must first determine if your client has the means to finance his retirement. If he does not have the financial capacity, no amount of emotional capacity and risk tolerance will improve the outcome.

Determining the financial capacity can be easy, as long as you convey to your client what retirement planning is: Providing realistic solutions and strategies such that his capital lasts a lifetime. It is not plugging some average numbers into a retirement calculator and saying, "On the average, Mr. Client, you should be OK". The averages don't cut it. For proper retirement planning, you must base your retirement solutions and strategies on adverse outcomes and not average outcomes. You need to emphasize the importance of the time value of fluctuations in your projections. Using the Monte Carlo simulators is a step in the right direction, but most fall short of reflecting historic market realities.

Sustainable Withdrawal Rate:
Sustainable Withdrawal Rate (SWR) is the largest periodic income that can be withdrawn from an investment portfolio without depleting the assets. It is based on market history. Having the financial capacity requires not only financing the retirement, but also financing the time value of fluctuations in the portfolio. The time value of fluctuations is defined as the losses created by long and short-term market fluctuations and inflation in distribution portfolios.

Ideally, the sustainable withdrawal rate indicates a zero percent probability of portfolio depletion. For practical purposes, combined with proper annual reviews, we can accept a more liberal probability of depletion. In this article, the SWR means a maximum of 10% probability of depletion at the age of death.

When it comes to retirement income, there are three significant risk factors for the retiree: The longevity risk –living too long-, the market risk –the portfolio running out of money prematurely-, and the inflation risk – the inability to maintain purchasing power-. A retirement plan must meet **all** these three criteria to be considered a well-designed plan.

We need to pay special attention to the longevity risk. Do not use the "life expectancy" or "average life expectancy" for a client's retirement plan. The average life expectancy is the age by which half of the people will die and the other half survives. In other words, if you use the average life expectancy as the age of death in your retirement plans, at least half of your clients will run out of money during their life. Some financial planning software goes further than that: they calculate the "average life expectancy" based on a list of questions, such as "how much you drink?" "how many speeding tickets did you have in the last 2 years?" and so on. These questions are useless unless you are an underwriter. Averages don't mean a thing when you are dealing with an individual client.

The proper way of handling the longevity risk is looking up the mortality tables. They indicate the percentage of survivability for each age. The age of death in a properly designed retirement plan should be high enough such that the probability of survival does not exceed 15%. This means for a 65-year-old client, use age 95 as the age of death, where the survival rate for a male is 7% and for a female 14%. For a couple, use age 95 for the younger spouse.

Going back to the SWR, we use 95 as the age of death to cover all three risks: longevity, market and inflation. Table 1 depicts sustainable withdrawal rates from an investment portfolio based on the market history, allowing for a probability of depletion less than 10%. The equity proxy is SP/TSX since 1919, average dividend 2%, average MER 2%. On the fixed income side, the long term net return (after expenses) is assumed 0.5% over and above the 6-month deposit rate.

Table 1: Sustainable withdrawal rate until age 95:

Retirement Age	Asset Mix Equity / Fixed Income	Sustainable Withdrawal Rate
55	50 / 50	3.2%
65	40 / 60	3.8%
75	30 / 70	5.3%

Source: Otar & Associates

Using the sustainable withdrawal rate, you can calculate how much assets you would need to finance one dollar of income form an investment portfolio. This is called "Asset Multiplier". It is calculated as 100 divided by the sustainable withdrawal rate. For example for each $1 annual withdrawal -indexed to inflation for life- starting at age 65,

lasting until age 95, you need about $26.32 of capital at the beginning of retirement, calculated as 100 divided by 3.8%. The following table shows the capital requirement at the start of retirement for each dollar of indexed withdrawal:

Table 2: Asset multiplier:

Retirement Age	Capital Required at the start of Retirement for each dollar of indexed annual withdrawal
55	$31.25
65	$26.32
75	$18.87

Source: Otar & Associates

The Green Zone:
If the client's retirement savings at the start of retirement is equal to or larger than the capital required as indicated in Table 2, then his investment portfolio will provide a lifelong income. This is the green zone, your client has abundant savings. He does not need to worry about annuities or variable annuities; his investment portfolio can finance retirement as well as the time value of fluctuations.

To make things easier, we can plot the asset multiplier as shown in Figure 1. This chart provides a quick way of determining if a client has abundant savings at the start of retirement. The horizontal scale indicates the retirement age. Divide the client's total savings by his annual income required at the beginning of retirement and mark that on the vertical scale. Observe if the point falls into the green (abundant) zone.

Example 1: Bob, 65, is just retiring. He wants his money to last until he is 95. His savings for are $1 million. Because he has other indexed pensions already, he needs only $20,000 annually (indexed to inflation) from his portfolio. Does Bob have abundant retirement savings?

Method 1 – Use tables: The capital required for retiring at age 65 is $26.32 for each dollar of income (see Table 2). The minimum capital he must have in his investment portfolio is $526,400, calculated as $20,000 x $26.32. He already has $1 million; therefore he has abundant retirement savings.

Method 2 - Use the chart: The capital available for each dollar of annual income is $50, calculated as $1,000,000 divided by $20,000. Plot that against age 65. The intercept - where the two arrows meet- is deep in the green zone. Therefore, Bob has abundant retirement savings. He can keep all his money in an investment portfolio and have a lifelong, indexed income.

Figure 1 – The green zone – abundant retirement savings
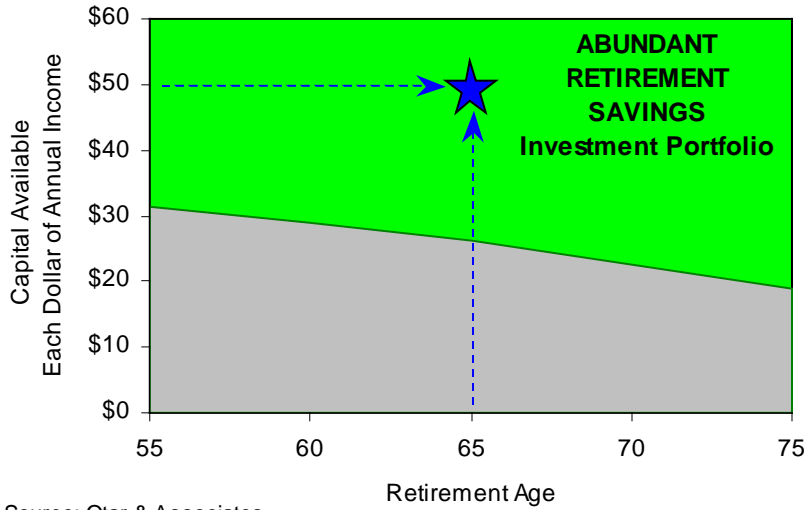
Source: Otar & Associates

We plot the portfolio value over his retirement, as if he were to start his retirement in any year since 1919 as depicted in Figure 2. This gives a bird's eye view of the range of all outcomes. The top decile (top 10%) is designated as "lucky" and the bottom decile is designated as "unlucky. The median is where half of the outcomes did better and half did worse.

Figure 2 – Investing in the green zone
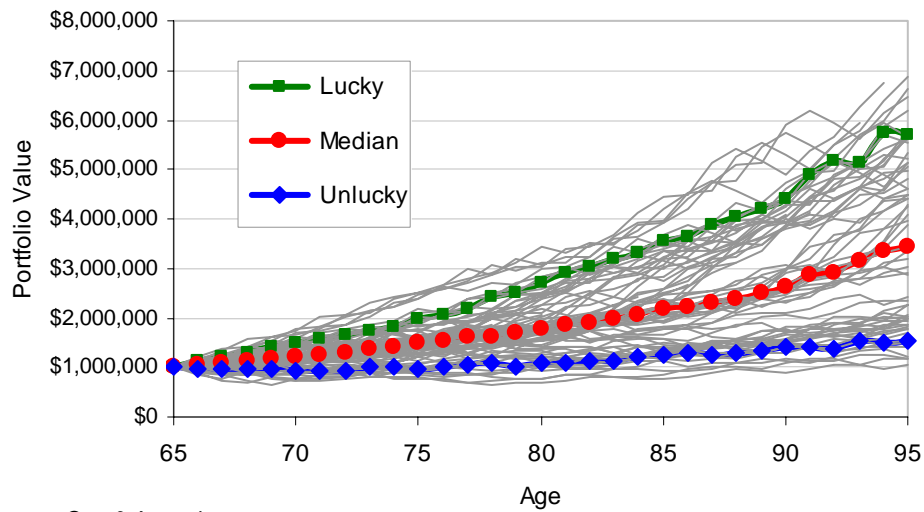
Source: Otar & Associates

The Red Zone:
Not all clients have abundant savings. Many will have to manage with less. If your client has insufficient savings then the most effective way of eliminating longevity, market and inflation risks is to buy a single premium immediate life annuity with payments that are indexed to CPI. For the same age of retirement, a life annuity pays more than the sustainable withdrawal rate from an investment portfolio. This is because both the capital and the longevity are pooled in an annuity.

Table 3 indicates the capital required to buy an annuity at the start of the retirement for each dollar of periodic income:

Table 3: Cost of indexed, single premium, immediate life annuity:

Retirement Age	Premium Required for each dollar of income	
	Female	Male
55	$27.69	$25.79
65	$22.01	$20.48
75	$15.71	$14.60

Source: Annuity quotes by Standard Life, July 4, 2007

If the client's savings at the start of his retirement is less than the capital required as indicated in Table 3, then he has insufficient savings and he is in the red zone (Figure 3).

In the red zone, your client has one practical choice—an indexed life annuity. It will pay less income than what the client needs, but he will have lifelong income. He does not need to worry about running out of money, and he won't be checking his portfolio every minute and driving you crazy in the process.

Example 2: Susan, 65, is just retiring. She wants her money to last until 95. Her savings are $1 million. She needs $60,000 annually (indexed to inflation) from her portfolio.

Method 1 – Use tables: Is Susan in the green zone? The capital required for a 30-year time horizon is $26.32 (see Table 2) for each dollar of income. She needs $60,000 income. Therefore, the minimum capital she must have in her investment portfolio is $1,579,200, calculated as $60,000 x $26.32. She has only $1 million, falling well short of the green zone.

Is Susan's in the red zone? The cost of a life annuity is $22.01 for each dollar of income (see Table 3). She needs $60,000 income annually. Therefore, the minimum capital she must have to buy a life annuity is $1,320,600, calculated as $60,000 x $22.01. She has only $1 million and therefore she is in the red zone, she has insufficient savings.

Method 2 – Use the chart: The capital available for each dollar of annual income is $16.67, calculated as $1,000,000 divided by $60,000. Plot that against age 65. The intercept is deep in the red zone in Figure 3 below. Susan has insufficient savings.

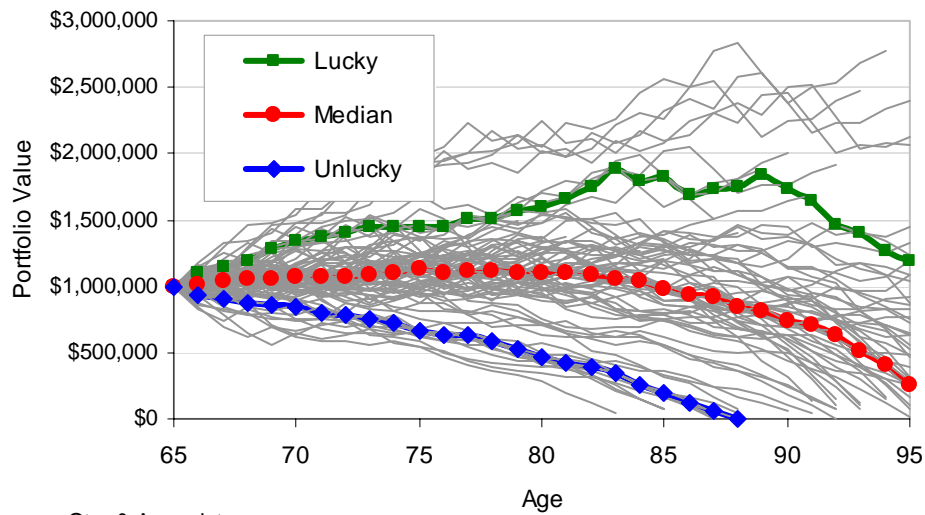Figure 3 –   The red zone – insufficient savings
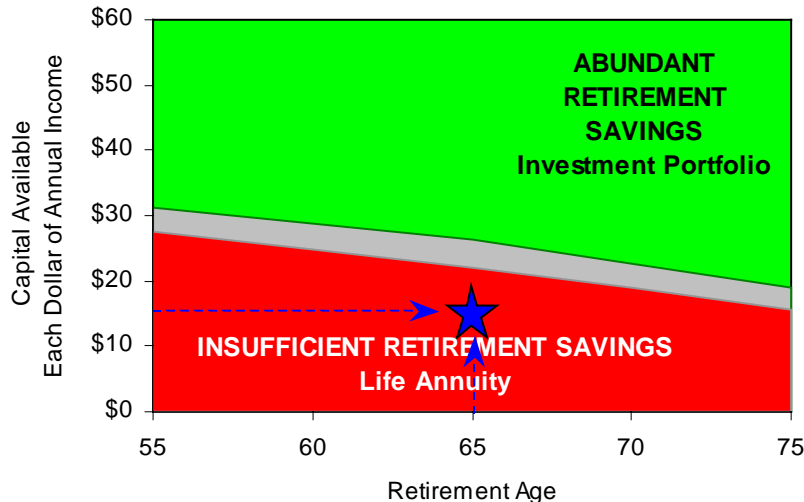
Source: Otar & Associates

Susan has only one feasible choice; buy a single premium immediate life annuity. This would pay her at age 65 an annual income of $45,434 indexed to CPI for the rest of her life, calculated as $1,000,000 / $22.01. She will need to adjust her lifestyle expenses. Nevertheless, she will have a guaranteed lifelong income, a much better outcome than holding the investment portfolio with an extreme high probability of running out of money.

Susan might think, "Well, if I am cutting back my expenses to $45,434 per year, why not keep the money in the investment portfolio and take income from there?" If she invested her money instead of buying a life annuity then the probability of running out of money by age 95 is 39% (see Figure 4). Anything over 10% is unacceptable in a properly designed retirement plan. As long as she withdraws more than $38,000 from her investment portfolio annually (Table 1, the sustainable withdrawal rate is 3.8% at age 65), her retirement finances would be at risk.

Figure 4 – Investing in the red zone

Source: Otar & Associates

So the lesson is, if retirement savings are insufficient/red zone, only a single premium indexed life annuity can provide guaranteed lifelong income, nothing else. Say "No!" to taking undue risks; resist the urge for the short-term gain that will likely bring long term pain.

The Gray Zone:

What about the gray area between the abundant/green zone and the insufficient/red zone? Here, your client has merely "sufficient retirement savings". You need to weigh your options carefully as to what combination of products will generate the lifelong retirement income. Some risk must be exported to an insurance company. The risks of financing the retirement only through an investment portfolio are too high. However, a "perfect mix" of an investment portfolio and an indexed life annuity provides lifelong income.

Keep in mind that clients don't like buying annuities. There are two things you can do to ease the pain: 1. Always buy the annuity with the minimum payment guarantee option. This is in case of a premature death; part or all of entire premium reverts back to the beneficiary or the estate. 2. Instead of buying an annuity in one installment, you can spread it over three or four years and build an annuity ladder. This would reduce the interest rate risk as well.

Example 3: Jane, 65, is just retiring. She wants her money to last until she is 95. She has retirement savings of $500,000. She needs $21,000 from her portfolio. The available capital for each dollar of annual income is $23.81, calculated as $500,000 divided by $21,000.

Method 1 – Use tables: For the green zone, capital required is $26.32 (Table 2) and for the red zone, it is $22.01 (Table 3) for each dollar of income. Jane has $23.81 of savings per dollar of income required which is in between the two figures. Therefore, she is in the gray/sufficient zone.

Method 2: Use the chart: Jane has $23.81 of capital available for each dollar of annual income. Plot that against age 65. The intercept is in the gray zone, as seen in Figure 5. Susan has sufficient savings, provided that the risk is exported to an insurance company.

Figure 5 – The Gray Zone – Sufficient Savings
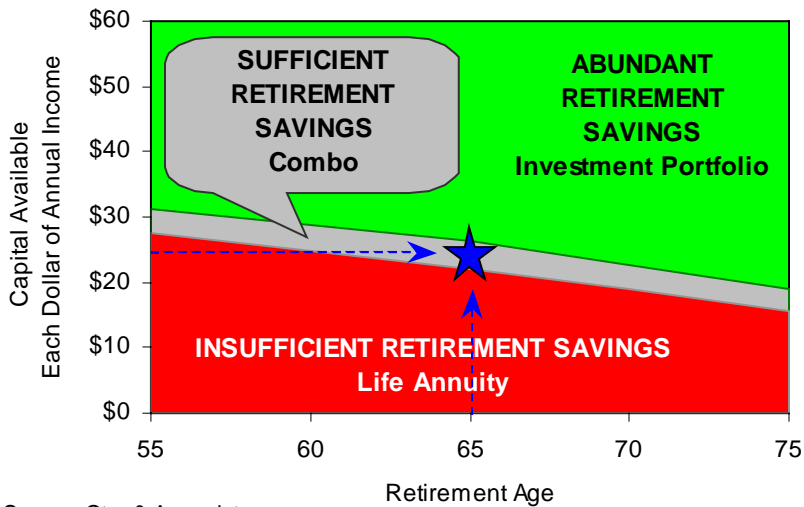
Source: Otar & Associates

The Perfect Mix: Here is the formula to calculate how much of the assets should be allocated to buy a life annuity in the gray zone:

Percent annuity required $= \dfrac{(AM - AC)}{(AM - CLA)} \times 100\%$

where:

- AM is the asset multiplier from Table 2
- CLA is the cost of life annuity from Table 3
- AC is available capital per dollar of income

Continuing with example 3, how much of Jane's money should go to buy a life annuity? At age 65, the AM is $26.32. Her CLA is $22.01. Her AC is $23.81. Plug these numbers into the Perfect Mix formula:

$$\text{Percent annuity required} = \frac{(26.32 - 23.81)}{(26.32 - 22.01)} \times 100\% = 58.2\%$$

Therefore, Jane should buy an indexed annuity for $291,000, calculated as 58.2% of $500,000 (nearest $1,000). The rest of the money, $209,000, stays in her investment portfolio. She would then have a lifelong income, as shown in Figure 6 below. The probability of depletion by age 95 is now 0%, based on market history.

Figure 6 –   The gray zone, the perfect mix solution
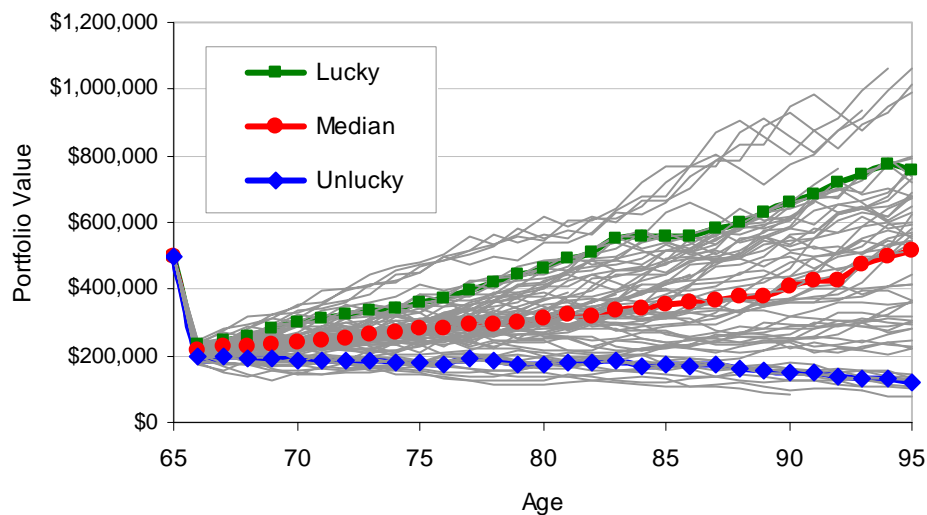
Source: Otar & Associates

What if Jane does not take your advice, refuses to buy a SPIA, and keeps all her money in the investments? Figure 7 depicts the consequences. The probability of running out of money by age 95 is 22%, not very high but still beyond my comfort level of 10%.

Figure 7 – The gray zone, the consequence of not buying the SPIA
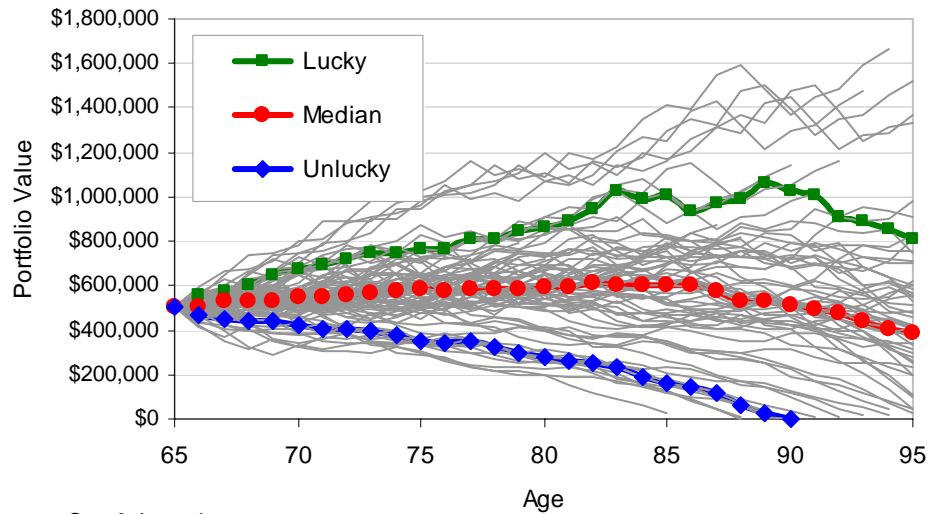
Source: Otar & Associates

Annuity Ladder:
In the gray zone, the purchase of annuities can be staggered over a number of years to reduce the interest rate risk. Also, as the client gets older, the annuity payout increases for the same premium.

Here is the rough rule of thumb in laddering an annuity in a most efficient way: The premium paid for each rung of the ladder should be about one half of the preceding amount. Going back to the perfect mix example, we calculated that Jane needed a life annuity for $291,000 to ensure lifelong income. Instead of buying it all at age 65, she can purchase it in three installments: $160,000 at age 65, $80,000 at age 67 and $51,000 at age 69.

In the red zone, do not ladder annuity purchases. The risk is too high for any delay.

In the green zone, the client does not need any annuities. However, if he wants to buy annuities just to feel safer, you can then suggest laddering it in the same way as in the gray zone.

However, if a client wants to buy an annuity in a single installment, don't argue about laddering, just do what he wants.

Variable Annuities:
Last year, variable annuities with 20-year withdrawal guarantees were introduced in Canada. At the time of writing, only two insurance companies in Canada are offering them. Because of space limitations, a detailed analysis will not fit into this article. However, unless the withdrawal guarantees are extended for life, as they are in USA, they do not protect the retiree against any of the three risks for life: longevity, market and inflation. It may be wise to wait until more attractive products with better guarantees and features are available in the marketplace.

Practice Management:
Can you make use of the zones in your day-to-day practice management? Definitely.

Many advisors chase high net worth clients in anticipation of larger commissions and/or trailer fees. It is not unusual for me to have a portfolio review with a high net worth client and then find out that he is in the red zone, usually as a result of excessive income requirement. The zone strategy described here gives you an excellent indication of the staying power of the high net worth client over a long time period. You don't want to attract high net worth clients, only to convert them into a low net worth client in ten years! You want them to prosper as time goes on. The key in distribution planning is not how much asset you have, but at what rate you withdraw from them.

If you want to minimize your workload, maximize your efficiency, avoid frantic phone calls from nervous clients after routine market fluctuations, and increase your income then try to attract and retain clients who are in the green zone. Generally, one is in the green zone not by accident but for a reason: A combination of higher income from work/business and careful spending habits, allows one to save more for the future and that is likely why he is in the green zone. These are the type of clients who value and respect your advice, treat you as a partner, and think that you deserve what you earn.

On the other hand, clients in the red zone are there because, for one excuse or another, they could not put aside sufficient retirement money. A client in this category is more likely to expect miracles from you, despises paying any fees, and phones you for your market opinion every time there is a correction. In short, in his eyes, too much of the "success" of his retirement depends on your actions instead of his capacity to save diligently and patiently over time. And this is the client who will take his assets "to the highest bidder" - of expected returns-. In many cases, you can't really help a client in the red zone; it becomes a matter of how much time and energy you can earmark for him. Keep it simple; just suggest the life annuity strategy, if they don't take the advice and want to gamble away their insufficient savings, send them to the competition.

Of course, there are many other considerations for complete retirement planning. Each case is different. However, implementing a methodical approach based on market history as demonstrated here, will help you develop bulletproof strategies that clients can enjoy for a lifetime. It will also help you reduce your professional liability.

Jim Otar, CMT, CFP, is a financial planner, a professional engineer, a market technician and a financial writer and the founder of retirementoptimizer.com. His past articles on retirement planning won the CFP Board Article Awards in 2001 and 2002. He is the author of High Expectation and False Dreams – One Hundred Years of Stock Market History Applied to Retirement Planning. jimotar@rogers.com