Investor Guide to the Lowest Cost ETFs 2026

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Chapter 1: Introduction

Section 1.1: Objectives

This book is for self-directed investors who want a convenient and efficient means to identify the lowest cost and most broadly diversified exchange-traded funds (ETFs), grouped into various asset classes. In addition, the information in this book is intended to increase your financial and investment knowledge, and it can help you to improve your ability to manage your own investment affairs efficiently and optimally.

The core of this book provides convenient information about the lowest cost index ETFs that individuals can purchase through discount brokers. These low-cost investment funds have been selected using the objective screening methods described in this book.

Slash your investment costs to the bone

Millions of do-it-yourself investors want to do a better job of managing their own finances. However, the financial industry confuses investors and complicates matters through excessive proliferation of complicated products. Meanwhile, the financial services industry charges excessively and repeatedly for these unnecessary complications. The financial industry will feed off your assets over your lifetime, if willingly pay over and over for its empty promises.

Only a relatively small portion of ETFs are really broadly diversified, passively managed investment funds with low costs, low turnover, and low associated taxes. Always have a strong preference for lower cost ETFs within any asset category. Buy them. Ignore all the rest that have middling or higher fees.

Never pay high brokerage fees and unnecessary sales charges

Buy ETFs directly and bypass all adviser and brokerage charges. Minimize brokerage fees by using discount brokers to execute your orders. Zero is the maximum industry sales and marketing fees you should pay.

When you purchase investment funds through an advisor, you are much more likely to reduce rather than increase your wealth. Never pay any broker or any other commissioned or fee-

based financial advisor another dime during your lifetime to tell you what funds you should buy. They do not know what will happen to future asset values any better than you do, because they have no special information upon which to make such judgments. Instead, their high advisory costs will be extracted from your assets up front and along the way throughout your life.

Investment research contradicts financial industry claims that it helps individual investors to do better. A very enlightening study, “Assessing the costs and benefits of brokers in the mutual fund industry,” analyzed the value of brokers to individual investors. The quantitative study found much higher costs but no added value. Across the board, investors did worse not better.

Go here for more information about this broker advice assessment study

This study could change your investment fund buying habits and save your substantial sums of money for the rest of your life. While the basis of this study was mutual funds promoted by brokers, the is no reason to believe that the conclusions would differ related to ETFs.

This book will also help you to understand why investment costs are not "just a few percent." When the average investor pays average investment costs over their lives, these fees consume about one-third of average annual investment returns. Year after year after year, the losses accumulate. Average investment costs are huge, and the negative impact is horrendous across a lifetime.

This book is based upon my widespread reading of the personal finance, financial planning, and investment research literature. I hope this book will help you to understand valid investment concepts. I also hope that it will help to counteract widespread misconceptions fostered by the financial industry and media. Acting on these misconceptions can lead you astray, add unnecessary investment risk, and substantially reduce your portfolio.

Section 1.2: Overview of this book's low-cost ETF tables

This book provides up-to-date tables of low-cost ETFs trading on US exchanges in these major categories:

* Global and international stock / equity ETFs
* US stock / equity ETFs
* International fixed income ETFs

* US fixed income ETFs
* International and US commodities ETFs

A sample of one of these tables is provided in this introductory chapter.

These tables serve a dual audience of readers who have greater or lesser degrees of experience and expertise in self-managed investing. The first tables provided in each of the major categories list the most broadly diversified "total market" ETFs available on US exchanges.

Investors with either significant or little experience should investigate the total market ETFs first. Broader diversification is always better and more preferable. Never walk away from broader diversification, unless you really have a good reason to do so. This is true even for more experienced and knowledgeable do-it-yourself investors. Less experienced investors should probably focus entirely on these total market ETF tables.

More experienced investors may have special circumstances, needs, and strategies that may require the additional tables in this book, which focus on subsets of the total market. Even if an investor has more sophisticated needs, however, there still is no good reason to overpay for ETFs, when similar funds with lower costs within a market subset are available.

All ETF tables in this book have the same format, and the rows are ordered according to increasing expenses. Each table row lists the:

1) fund name,
2) management expense ratio (%/year),
and
3) ticker symbol,

The ticker symbol and fund name allow you easily to look up the fund as you perform your due diligence research prior to buying. Just enter the ticker symbol into Bloomberg, Google, etf.com, Morningstar, Yahoo, or whatever website(s) you prefer to use when you investigate potential investments.

Section 1.3: Examples of this book's low-cost ETF tables

To give you a better sense from the outset, this section provides several examples of the low-cost ETF tables found later in this book. These three sample tables list the lowest cost core large capitalization ETFs benchmarked against: A) the Standard and Poors (S&P) 500 stock index, B) various megacap or very large capitalization indexes, and C) other large cap indexes, such as the Russell 1000.

The funds in these sample tables represent the largest capitalization US stock fund segments. For example, the S&P 500 stock index includes 500 stocks that account for 70% to 75% of US stock market capitalization. Over one thousand mutual funds and ETF funds that benchmark their performance against the S&P 500 stock index.

Nevertheless, the S&P 500 and the other large cap indexes that underlie the ETFs in these sample tables do not cover the entire US stock market. Therefore, they do not provide complete US stock market diversification. To achieve full market diversification, you can combine these large cap ETFs with mid cap and small cap ETFs. Alternatively, you can just select from among the US whole market ETFs that are also listed in this book.

If you want to invest in the US large capitalization stocks tracked by the S&P 500 stock index, you should understand that the average annual management expense ratio of the average mutual fund tracking the S&P 500 index costs about one percent annually! In contrast, the most expensive S&P 500 core ETF fund in the table below is less than 1/10th of that ridiculously high investment management fee.

Do your S&P 500 investment funds or other large cap investment funds have such low fees? If not, why are you paying so much, when you could instead invest in these much lower cost ETFs? There is no good reason for you to pay more.

Table 1.1 – US S&P 500 large capitalization core stock ETFs with low costs

Vanguard S&P 500 ETF -- 0.03% exp. -- VOO

iShares Core S&P 500 ETF -- 0.03% exp. -- IVV

SPDR S&P 500 ETF -- 0.09% exp. -- SPY

(This is the same as Table 5.2.1 below.)

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 1.2 – US megacap and very large cap core stock ETFs with low costs

Vanguard Mega Cap ETF -- 0.07% exp. -- MGC

iShares Russell Top 200 ETF -- 0.15% exp. -- IWL

SPDR Dow Jones Industrial Average ETF Trust -- 0.16% exp. -- DIA

Invesco S&P 500 Top 50 ETF -- 0.20% exp. -- XLG

iShares S&P 100 ETF -- 0.20% exp. -- OEF

(This is the same as Table 5.2.2 below.)

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 1.3 – US other large capitalization core stock ETFs with low costs

SPDR Portfolio Large Cap ETF -- 0.02% exp. -- SPLG

Schwab U.S. Large-Cap ETF -- 0.03% exp. -- SCHX

Schwab 1000 Index ETF -- 0.03% exp. -- SCHK

Vanguard Large-Cap ETF -- 0.04% exp. -- VV

Vanguard Russell 1000 ETF -- 0.07% exp. -- VONE

WisdomTree U.S. Large Cap Fund ETF -- 0.08% exp. -- EPS

iShares Russell 1000 ETF -- 0.15% exp. -- IWB

Invesco QQQ Trust ETF -- 0.20% exp. -- QQQ

(This is the same as Table 5.2.3 below.)

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Chapter 2: Exchange-traded funds (ETFs) versus mutual funds

Section 2.1: What are exchange-traded funds (ETFs) and exchange-traded products (ETPs)?

At a minimum, ETFs are investment funds that trade like stocks on securities exchanges

This chapter focuses on information about low-cost ETFs, which account for small portion of the over 3,100 ETFs and other exchange-traded products (ETPs) available to US investors. This introduction covers certain topics related to ETFs that are important to the investor who intends to use low-cost ETFs as an alternative to low cost, no load mutual funds. Either can be used to implement a broadly diversified, passive, low tax, low effort, long-term buy-and-hold-and-hold investment strategy.

Low-cost index mutual funds and low-cost index ETFs are largely interchangeable. Either one or the other or some combination of the two will do. The commonality and interchangeability of ETFs and mutual funds is derived from an investor's commitment to choose only very broadly diversified and very low-cost investment funds of either type. At the low cost and broadly diversified end of the investment fund product spectrum, either form of investment fund can serve the needs of the passive, long-term investor.

There have been long-running and generally self-interested financial industry arguments about the structural merits and demerits of mutual funds versus ETFs. These arguments are largely canards, as are so many other supposed "debates" about investing and investment products. The financial and investment industry perpetuates "debates" whenever there is enough variability in results to enable self-interested denial or twisting of objective research evidence.

With mutual funds and ETFs, their differences and supposed advantages or disadvantages really only manifest themselves, when a sub-optimal investment strategy is attempted using either investment fund vehicle. Differences between ETFs and mutual funds can show up in less-diversified, higher cost, more active, higher turnover investment strategies. However, then the source of the problem is not the comparative structure of the investment fund vehicle, but the real problem is the lousy, sub-optimal strategy that deviates from a passive, low-cost index investment strategy.

Whenever you decide to cut your investment costs to the bone, of necessity, you must choose from among broadly diversified, passive, index fund investments. Passive index tracking strategies are the only strategies that can be implemented cheaply and economically by an investment fund company. Passive index tracking strategies are the only fund strategies that can be priced very low in terms of the fees, costs, and taxes that the investor must pay directly or indirectly. Only if an investment fund operates very efficiently can it offer very low fees and be competitive.

At the highly efficient, low fee, low-cost end of the investment fund product spectrum, index mutual funds and index ETFs become largely interchangeable. Both types of funds track the same passive, diversified indexes and both need to attract substantial assets to operate efficiently. Many investors are cost sensitive and will direct their assets to lower cost vendors. The only way for vendors to be profitable is to run highly efficient operations, because the investors they attract refuse to pay higher fees when there is no assurance of superior performance. Investors who prefer low-cost mutual funds and/or ETFs have given up on the active-management shell game Through past disappointments, they have learned not to be attracted by ephemeral performance charts and stars. The just want low fees, low costs, time efficiency, and low taxes.

Structurally, ETFs are not as simple as mutual funds. Be aware that ETFs are a major subset of the more general category of exchange-traded products (ETPs). This chapter points out important characteristics of ETFs and ETPs that could affect your decision concerning whether to choose low-cost ETFs and/or low-cost no-load index mutual funds to implement your investment strategy. If you are also interested in low-cost index mutual funds, look at my companion book: Buyer's Guide to Low Cost No Load Mutual Funds

> Note: This introduction simply cannot offer a comprehensive treatment of the subject of ETFs and the broader category of ETPs. A full treatment of ETFs and ETPs would be a very thick book in itself. If you really want to understand the ins and outs of ETPs and ETFs and you have the time to read, then a starting point for your research could be these two Wikipedia pages and the various other sources on the web that are linked to in the footnotes on these web pages:
>
> **http://en.wikipedia.org/wiki/Exchange-traded_fund**
>
> **https://en.wikipedia.org/wiki/Exchange-traded_product**

ETFs and ETPs are much more than "mutual funds that trade like stocks"

You should be aware of key aspects of ETFs and ETPs construction and behavior. If you do not feel that you know enough about these topics and other features of exchange-traded products, you should do your research before investing in any exchange-traded product or ETF.

ETFs and ETPs do trade on the securities markets “just like” stocks. They have a most recent trading price and a price history. Prices fluctuate, and there is a variable bid-ask spread. The bid-ask spread is an important additional cost factor to consider, since the trading spread is often much wider than you might expect. ETF bid-ask spreads, as a percent of the securities, increase with smaller and less liquid ETPs and with increased market volatility.

The largest ETFs with higher daily trading volume (“liquidity”) often, but not always, will have bid-ask spreads that are under .05% of the price per share. However, spreads on other smaller and less liquid ETFs – which are the majority of ETFs – can have noticeably wider spreads, sometimes routinely over 1% of share price and occasionally even higher.

In screening the universe of over 4,849 ETF/ETPs for this book, one of the factors evaluated with the average bit-ask percentage spread in the winter of 2025/26. You should note that only a couple percent of all ETFs listed in this book had a bid-ask spread that exceeded .25% (one-quarter of one percent). Higher bid-ask spreads were associated with more specialized asset categories that also tended to have higher expense ratios. For most long-term buy and hold investors, these more specialized asset categories with higher expense ratios can easily be avoided in favor or the broader, more diversified asset classes. The bid-ask percentage spread was not included in the tables of this book, because:

A) bid-ask percentage spreads will vary over time
B) you can and should check the bid-ask spread prior to buying any ETF, and
C) if you are a long-term buy-and-hold investor, your brokerage costs will be amortized over the years – whereas the expense ratio you pay for an ETF will repeat yearly.

ETF bid-ask trading spreads are an important subject that you should not gloss over or ignore. If you do not know how to control your total ETF trading costs, then just buy very low-cost no-load index mutual funds directly from a mutual fund company. You get the end of day

net asset value price per share just like everyone else, and the mutual fund's professional traders will manage the necessary trading efficiently for you.

In addition to a variable bid-ask trading spread, ETFs also may trade at a fluctuating discount or premium to the value of the underlying assets defined by the fund's index. The sizes of discounts and premiums are limited by trading arbitrage activities among professional traders who attempt to profit through the ETF share creation and redemption process. ETF discounts and premiums also tend to increase with smaller, less liquid ETPs and with higher market volatility. Like the bid-ask trading spread, ETF discounts and premiums may be larger than you might expect.

Wide discounts and premiums are particularly a problem with bond ETFs. Just because bond ETFs trade like stocks, they do not magically overcome the high costs, complexity, and opaqueness of bond market trading. Instead, bond ETFs just manifest these problems in discounts and premiums.

Particularly during market turmoil, when there is a significant imbalance in buying and selling demand, bond ETF discounts, premiums, and their fluctuations can be stunning. JNK (SPDR Bloomberg High Yield Bond ETF) and HYG (iShares iBoxx $ High Yield Corporate Bond ETF) are two high yield (junk) bond funds have the lowest expenses in their category and normally trade with a relatively narrow discount or premium. Combined they hold assets valued at tens of billions of dollars. However, despite being very large and having high trading volumes, these funds were not immune to widening discounts and premiums in shorter periods.

In late 2008, HYG swung from a discount of 7.9% to a premium of 12.7% in two months. In early 2009, JNK had a 9+% premium flip over to a 2.5% discount within two weeks. During the municipal bond mini-panic in the fourth quarter of 2010, most municipal bond ETFs traded at a discount to their asset value throughout the quarter. (Michelle Knight, "Rethinking Bond ETFs", Financial Advisor Magazine, August 2011, p. 85-86)

Sometimes ETFs/ETPs are summarizes as "mutual funds that trade like stocks" intra-day on stock exchanges. Nevertheless, ETF and mutual fund pricing, purchase, and sale processes differ significantly.

“Open end” mutual funds, which is what most mutual funds are, have a once-a-day, end-of-day settlement, share pricing, and purchase/sale process. The mutual fund company manages all of this internally for its investors.

Some mutual funds allow retail investors to do business directly with the fund company, while others require you to use an intermediary. You can buy most mutual funds through a full-service broker, a discount broker, or a financial advisor. However, this does not mean that the mutual funds themselves trade on an exchange. It just means you are paying an intermediary for this service. Often these intermediaries steer you into significantly more expensive and more active funds that provide higher compensation to the advisor. The research literature indicates that these intermediaries have no special knowledge or skill in selecting funds, and thus you may be paying dearly, if you use an intermediary to buy investment funds.

Mutual funds internalize the costs of market trading associated:

a) with management decisions about composition of the overall portfolio and
b) due to net investor inflows and outflows related to the purchase and sale of shares.

Like mutual funds, ETFs retain the trading costs associated with managing the overall portfolio. However, ETFs externalize trading costs related to investor buying and selling.

Thus, existing and inactive buy-and-hold ETF shareholders are insulated from the trading activities of other investors. ETF traders bear their own trading costs. Often, this is promoted as a virtue of ETFs relative to mutual funds. However, externalizing acquisition trading costs is only a virtue if the ETF investor trades carefully and economically and holds the position for a long time to amortize the trading costs that are incurred directly.

Unfortunately, the data indicate that ETF ease-of-trading and the supposed low cost, “under ten bucks” trading via discount brokers can induce many individual “retail” investors to trade frequently. With higher trading frequency, trading costs mount rapidly on a percent of average asset value per time basis. It is unlikely that many individual investors track their ETF trading costs properly and carefully, including 1) brokerage fees, 2) the portion of the bid-ask spread they pay, and 3) the fact that they pay both buying and selling costs on each round-trip transaction.

While ETFs/ETPs "trade like stocks" they are much more varied that regular equity securities. For example, ETFs also include bond ETFs that "trade like stocks." While other equity security classes that can trade on the stock markets, the vast majority of equity securities are common stocks. Presumably, individual investors should know what they are buying, when they buy and sell stocks, but this is not always the case. Given the much greater variety of ETFs/ETPs, it is even more likely that some amateur traders make simplifying assumptions about ETFs/ETPs that are not always accurate.

Since the introduction of ETFs over two decades ago, ETFs have proliferated and total invested assets first exceeded $4 trillion in mid-2019 according to the investopedia.com website. Nevertheless, many investors may not be sufficiently aware that "an ETF is not necessarily an ETF." Thus, I have included the term, ETP, for the more general class of investment funds that trade on exchanges.

In addition to ETFs, the class of ETPs also includes:

A) closed-end funds (traded mutual funds that have been around for decades),
B) exchange-traded notes for commodities, currencies, and certificates,
C) exchange-traded derivative contracts,
D) exchange-traded grantor trusts,
E) leveraged ETFs, and other exchange-traded instruments.

Taxation is one reason why individual retail traders should understand differences between exchange-traded product investment vehicles. ETFs supposedly are more tax efficient than mutual funds and ETF advocates promote this as an advantage of ETFs over mutual funds.

Given excessive trading frequency, repeated brokerage charges, and excessively wide bid-ask spreads, it is unlikely that many retail ETF traders actually do capture the potential tax advantages of ETFs. Short holding periods also mean that many traders do not capture long-term capital gains tax rate advantages.

In addition, if an investor does not do his research beforehand and does not understand that "an ETF is not necessarily and ETF", he may buy another type of ETP with different tax treatment. Lower long-term capital gains tax treatment is not even available with some forms of

ETPs. ETPs all have ticker symbols and can be bought and sold easily. For that standpoint, they look the same.

The buyer of "an ETP that is not an ETF" may be surprised to find that the tax treatment of some of these ETP vehicles, such as ETNs, differs substantially from the tax treatment of a plain old common stock ETF. That discovery might not occur until tax filing time. This is another compelling reason actually to read the prospectus BEFORE buying. When it comes to filing your income taxes, have you ever needed to understand and deal with a K-1 form that is typically associated with an ownership interest in a partnership? If you wish to avoid this, then understand what you are buying beforehand. Even though they are not listed in this book, you should note that some ETP/ETN investments actually have "K-1" or "No K-1" in their titles. Fun huh?

Unexpected performance characteristics of some ETPs are another reason to get educated about various special structure ETPs. For example, certain leveraged, inverse, and long and short strategy ETFs can have surprising performance and volatility characteristics. An uninformed individual investor might not realize the returns that had been expected, even if the market moved a desired direction.

For more information, see these webpages:

* SEC "Updated Investor Bulletin: Leveraged and Inverse ETFs" Feb. 23, 2023

https://www.sec.gov/investor/pubs/leveragedetfs-alert

* FINRA (the Financial Industry Regulatory Authority) "Exchange-Traded Notes—Avoid Unpleasant Surprises" October 20, 2022

https://www.finra.org/investors/insights/exchange-traded-notes-avoid-unpleasant-surprises

* FINRA Regulatory Guidance: "Non-Traditional ETFs FAQ "

https://www.finra.org/rules-guidance/key-topics/etf/non-traditional-etf-faq

Section 2.2: Are ETF management expenses really lower than mutual fund management expenses?

Yes and no. When you look at the full range of ETF management expenses, you find the most ETFs have a management expense ratio well under 1% per year. In contrast, the average

expense ratio for mutual funds exceeds 1%, so obviously the majority of mutual funds carry management expenses that are over 1% per year. Clearly, it would seem that ETFs are generally cheaper than mutual funds. This in NOT necessarily true.

Most ETFs are passively managed index funds

ETF management expenses appear to be lower than mutual funds, but that is largely because most ETFs are just passively managed index funds. When you think of ETFs as just exchange tradable passive index funds, then instead, you might ask: why are ETF management expenses actually so high – rather than so low?

Why are ETF management expenses so high, when you can find both no load mutual funds and other ETFs with substantially lower fees that passively track the very same indexes? These funds are doing the same thing and targeting the same result. Why pay more for your train ticket, if the train cars are all the same, they are going to the same destination, and they will arrive at the same time? Are you willing to pay a lot more for your ticket, just so that you can trade ETFs intraday or for some other supposed ETF advantage? When you are a long-term buy and hold investor, the intraday trading feature is largely irrelevant. When you buy and hold broadly diversified index funds as either mutual funds or ETFs, the supposed tax advantages of ETFs tend to disappear, as well.

In short, comparing the average ETF expense ratio to the average mutual fund expense ratio is a false comparison. The correct comparison is between only passive index mutual funds and ETFs and not the universe of mutual funds, which includes actively managed mutual funds with much higher expenses.

> **Note: The fact that most ETFs are directly comparable to passive index funds tends to constrain the range of ETF expenses through competitive forces and professional and amateur buyer choice. In contrast, what could justify the much higher management expenses for mutual funds? In short, nothing.**

Actively-managed mutual funds just have more randomness and volatility of outcome within which to hide versus an index fund. High cost actively managed mutual funds attempt to justify their high expenses based on superior performance. However, the statistics indicate that their average performance results are inferior and increasingly so with an increasing time horizon.

The comparison between ETFs and mutual funds is not simple. Until recently, every ETF was effectively a passively managed index fund. In the past few years, some highly constrained actively-managed ETFs have been brought to market. However, these new active ETFs are relatively constrained oddities that only account for a very small percentage of the over $3 trillion in assets now invested in US ETFs.

Mutual funds need to report their detailed portfolio holdings only on a quarterly basis and, even then, there are some months of delay in the release of these four end-of-quarter portfolio composition reports relative to the actual date of portfolio composition snapshot that is reported. In effect, reasonably accurate and current information about mutual fund portfolios is just not available. This allows mutual funds to execute changes to their portfolios without other securities market traders knowing their playbook and trying to game their trades. Therefore, the structure of mutual funds and the infrequent and delayed reporting of their holdings allow for the private revision of mutual fund portfolios and the hidden execution of active, stock picking strategies.

In contrast, the portfolios of ETFs are known publicly on a current, almost real-time basis. This is an artifact of how ETF shares are created. In general, there are authorized market participants who are the only securities market intermediaries who are authorized to create (or destroy) ETF shares. When you buy ETF shares on an exchange, you are not interacting with the manager of the ETF. When you buy ETF shares via a broker intermediary, you are either buying existing shares from another ETF share owner or ETF shares are being created to be delivered to you, though behind the scenes cooperation between the ETF and its authorized participants.

As aggregate market demand for ETFs rises (/falls) the market value of the ETF can vary from the value of its underlying securities. This creates incentives for authorized participants to create (/trade-in) more shares by delivering (/receiving) a basket of securities to (/from) the ETF manager.

This ETF share creation and destruction process is conducted a large scale and not on a retail customer transaction order-by-order basis. If an authorized participant creates a block of ETF shares, these shares are held in their inventory until they are rather quickly moved onto the market. Authorized participants create ETF shares when demand rises and they see an opportunity for profit in the arbitrage process between the ETF share market price and the value

of the underlying index basket of securities. This is how trading expenses related to new ETF shares are externalized, when compared to the mutual fund share creation process.

In order to implement this process, the composition of the ETF must be known publicly and in real time during the trading day. The ETF tracks a published securities index, which defines the underlying securities and their relative quantities. An alignment of the value of the overall ETF relative to its underlying securities is maintained by competing market participants. There are many more details and nuances, but the basic point is that almost all ETFs are inherently passive index funds with portfolio compositions known in real-time.

Volatility aids the actively managed mutual fund mirage

The reason why some mutual funds have even higher fees is simply that they are gouging their customers more, but on average are not likely to deliver the value-added that they imply they will. They hide behind market volatility, random or chance performance results, and the shell game of naïve investor performance chasing and personal portfolio churning.

On the other hand, ETF vendors are limited in how much more they can gouge their customers. Their ETF products are just passive index funds and are more obviously comparable to both lower cost ETFs and lower cost index mutual funds. This is not the case with high-cost mutual funds, because the mutual funds and their industry sales agents claim that selected active mutual funds have skilled securities pickers, who can identify superior securities and avoid inferior securities before the fact. Their sales agents claim that active mutual funds are better than index funds. They claim that the fund managers are very smart, and that you do not have to settle for a “market return.”

Financial industry sales compensation affects fund recommendations

Actively managed mutual funds rely upon a compensated sales force to push them. Ask a typical “full service” broker or “financial advisor” about using only index mutual funds, and very often you will face derision about targeting a “mediocre” market return and not shooting high enough with your investment assets. More expensive, actively managed mutual funds are what get recommended on the basis of higher past returns that are naively projected to continue into

the future. Do you think that the higher sales compensation related to these higher cost actively managed funds might affect the advice you get?

Now, ask a typical "full service" broker about ETFs – which are just exchange tradable index funds – and the story is likely to change. You might hear that ETFs are probably a pretty darn good idea as an investment. Do you think that the much higher brokerage fees charged by full-service brokers might affect the advice you get about ETFs?

Through selective marketing tactics, active fund customers are sold on the fantasy that they are more likely beat rather than trail the market benchmark return. Unfortunately, a large segment of the individual investor population does not pay close attention to their actual results relative to the cheaper passive investment strategy alternative that is always available to them.

In addition, numerous financial research studies have shown that a large portion of high-cost mutual funds just are "closet index funds" to a greater or lesser degree. Many higher cost mutual funds are really far more expensive than even their expenses would imply. For example, if 75% of the portfolio holdings of an "actively managed" mutual fund with a 1.5% management fee overall, simply matches the benchmark index and only 25% of the portfolio differs from the benchmark, then investors are grossly overpaying for three-quarters of that fund's "closet index" holdings.

To begin with, a 1.5% percent management fee is a huge expense burden to make up across an actively managed mutual fund portfolio. Think of high mutual fund fees as having to start a marathon a few miles back. To make up for the extra miles (extra costs), the manager must run those extra miles before your money even gets up to the starting line. Meanwhile, the low-cost passive index funds tracking the market have already started at the real marathon starting line and is likely to be far ahead.

Your active manager needs to be pretty darn good, because he or she has to run faster to catch up and move ahead. (Hint: the historical record shows that most will not catch up, but they will never refund their unearned fees.) Now, if the returns on three-quarters of the holdings of an actively managed "closet index fund" are destined automatically to match the benchmark return, simply because they actually are the benchmark, then victory in the race becomes far less likely. Because only 25% of the portfolio is actually "active," those securities had better run very fast to make up for the high fee being charged across the entire portfolio.

Chapter 3: Rational investment fund selection

Section 3.1: Valid, research-based criteria for screening investment funds

People simply want to invest in what they hope will be better investment funds. They want straightforward selection criteria that can lead to a higher probability of doing better in the future on both a sustained net performance and risk-adjusted basis.

With real lives to lead, people who are not professional investors just want an efficient and effective fund identification process. They want to pick the best mutual funds or ETFs that will make their investment assets work for them. Most people do not want to have to "work for" their assets by spending large amounts of time monitoring and repeatedly changing from one investment fund to another. Many who do spend more time probably think their added efforts are beneficial, but the research indicates the opposite.

Millions of individual investors run futile hamster wheel races pursuing the illusion that the superior past performance of some investment funds and individual securities will lead to the same superior performance in the future. I have written this book for those of you who want to stop "chasing your personal finance tail" and get on with your real life.

Of course, it is difficult to stop running in a personal hamster wheel, unless you are convinced that there is better approach that you can implement yourself with relative ease. The

good news for you is that this book provides an easy, better, research-validated way for you to find investment funds.

The best investment fund selection problem solved for individual investors

When viewed through the lens of the best interests of an individual investor, the vast majority of available investment funds are just chaff – not wheat. Once this chaff - created by a profit seeking financial industry for its own interests - has been removed, only low cost, low turnover index funds remain.

Valid and rational fund screening rules based on the research literature are discussed in this chapter. These screening rules have already been used to winnow down the full list of available ETFs and to determine the much smaller number of low-cost ETFs that are listed in the tables of this book.

All the pre-screening grunt work has been done for you. Your fund selection problem has been narrowed down to a much more manageable number of categorized funds for you to evaluate in more detail. You do not have to pay high fees to expensive financial advisors. Assemble your own investment portfolio from these low-cost index ETFs and ignore the rest.

Low-cost index funds simply are better

Taken as a whole, the vast body of investment research studies show that there really are better approaches to buying and owning investment funds. You do not need to chase fund performance. Performance chasing simply does not work. The vast majority of individuals who chase investment fund performance get results that are far worse than a passive approach.

Better performance tends to come to those individual investors who calm down and try to understand what actually has been demonstrated to work in the investment research literature. Below we introduce selection criteria that will lead you to low-cost ETFs to hold for the very long term.

Section 3.2: Characteristics of the low-cost ETFs in this book

The low-cost ETFs listed in this book were selected from the universe of over 4,800 available ETFs and ETPs that are traded on exchanges in the United States. The screening and

selection process involved applying the seven rational investment fund selection criteria and investment fund screening methods described in this chapter.

The ETFs listed in these tables are the lowest cost funds available from the standpoint of their management expense ratio. Very low-cost management expenses tend to be highly correlated with other important investment cost-efficiency factors, such as very low fund portfolio turnover, and the absence of unwarranted financial advisor sales fees.

While the presumption might be that higher cost ETFs lead to superior returns, the research literature indicates that the opposite is the case. High-cost ETFs do NOT justify their existence through better risk-adjusted results. While there is a great deal of variability performance outcomes across ETFs, these results predominantly demonstrate just random chance patterns. This becomes clearer as the evaluation time horizon lengthens, more supposed winners cease to be winners, and an increasing majority of more expensive, actively managed funds lags behind the results of very low cost, passively-managed index ETFs.

You can buy these ETFs through a discount broker and cut out the expensive middle-man. The investment research literature does not indicate that financial advisors and full-service brokers have any better insight or any consistent skill in picking superior actively managed funds. The high fees of financial advisors and brokers just erode your returns and cause you to fall further behind a passive, buy-and-hold index fund strategy that uses ETFs that are purchased via discount brokers.

These funds have additional low-cost attributes, because most have very low portfolio turnover. Passively managed index funds are designed to track a market index. They do not need to repeatedly buy and sell securities and thus turn over their portfolios in pursuit of superior returns. Passively managed index funds are designed to track a market index. Therefore, index funds do not need to incur the increased trading costs that are associated with higher “alpha-seeking” portfolio turnover.

With investment portfolios, trading can be very costly, and less trading is better than more trading. Pay attention to turnover and other factors as you evaluate any particular investment. If you do not have a compelling reason to choose a fund with higher turnover, then do not buy them.

Determining the final list of low-cost funds for each asset class table

The tables of this book include the lowest cost ETFs available in a particular asset category. Inclusion cutoff rules were required to determine the highest expense fund that would be included in each table. Different ETF categories inherently involve greater or lesser costs, so an overall arbitrary and fixed maximum expense ratio cut-off was not appropriate across all categories.

All ETF tables in this book include the management expense ratio and these fund expenses are listed in ascending order within that particular category of ETFs. You should note that 98+% of the funds listed each have at least $100 million dollars in total invested assets. The management expense ratio and total invested assets are important in the final screening process and the decision on where to set the cut-off point for fund inclusion.

The ETF screening criteria discussed in this book eliminate the majority of ETFs in any particular category. Then, a final decision was needed for each asset category regarding an ETF inclusion cut-off point.

The following rules were applied within asset class tables to determine that maximum management expense ratio cutoff point:

a) In each of the many asset category tables below, the fund with lowest expense ratio established the expense ratio baseline.

b) In any asset category table, a range of expenses of an additional .20% was allowed relative to the lowest cost fund in that category. Assume, for example, that the lowest cost ETF within a particular asset category had an expense ratio of .07% per year. That would mean that the any other ETF in that category would be included in that table up to .27% per year.

c) To avoid a rigid expense ratio cutoff point for some asset categories, some modestly higher fee funds may be included. Whenever this is the case, the table will include this bold line to mark when this happens.

====== Note: This category's lowest expense fund +.20% =====

d) When selecting ETFs, the two dominant selection criteria should be the asset category and low expenses. That is what this book provides to you. This book is a first cut at improving how much of the market return you get to keep versus how much you give away to the financial industry. This is a major step, but not the final step. Then, the fun begins. Low-cost funds in an investment category are not all the same. You should understand them, before you choose among them.

e) Very small funds cannot operate efficiently, and if their assets do not grow, they have a much greater likelihood of being closed or having their expenses increased. No fund with less than $100 million in invested assets has been included in this book – unless there were no other funds in that category with more than $100 million in invested assets.

f) The screening of funds was performed on market data available in December of 2025. Obviously, you should seek current fund information and read the fund prospectus and do additional due diligence before making any investment – now or any time during your life.

Section 3.3: Choose ETFs with the lowest management fees

The higher the annual management expense ratio of a fund, the more you should question why you should pay higher portfolio management expenses for that fund. Paying more tends to lead to inferior rather than superior performance net of your costs and taxes.

Lower investment management fees are better. Lowest is often best, and lower fee funds are almost always passively managed index funds. Since there are numerous ETFs with annual expenses below .20%, always look there first.

With a passively managed index ETF or index mutual fund, you tend to get a net investment return that is close to the gross return of the index less the costs of that particular fund. The deviation between the gross return of an index and the fund that tracks that index is known as the tracking error. For index funds, the bulk of the tracking error can usually be accounted for by the management expense ratio of the fund. Therefore, the expense ratio is a conveniently available proxy for what should be the largest portion of an index fund's tracking error. However, you should be aware that tracking error can exceed a fund's expense ratio, when it does not closely

replicate the index, has higher turnover, trades inefficiently, does not quickly reinvest dividends, etc.

A higher management expense ratio and greater inefficiencies tend to cause an ETF to trail the returns of other lower cost ETF in the same asset category. You should note that most of the investment fund research data focuses on mutual funds. Compared to ETFs, mutual funds which have decades more data and ten times the invested assets. The great majority of mutual funds have been actively managed funds with significantly higher management expenses. A higher management expense ratio can only be justified, if an investment fund earns an even higher net return that compensates for its higher expenses. The research literature on higher cost actively managed investment funds is very instructive. In a nutshell, the more you pay, the less you keep.

In addition, you have no reliable way to tell beforehand which fund will return more than its added costs. The investment fund management industry keeps pointing to past performance and Morningstar ratings as predictors, when superior past performance and 4-star and 5-star ratings are completely useless predictors. Instead, lower costs and lower turnover are far superior predictors of future mutual fund performance.

An individual investor is better served by choosing from among the lowest cost index ETFs and index mutual funds from investment fund companies that have decided to compete on low costs. You will still have more choices than you need, if you restrict your investment fund choices to those passively managed ETFs that are trying to attract individual investors' money by charging the very lowest fees.

Section 3.4: Select ETFs with the lowest portfolio turnover

The best ETFs have very low portfolio turnover

Turnover is calculated as a percentage of the fund's average portfolio value on an annual basis. Depending upon the type of investment fund and the activity of fund managers, annual percentage turnover for mutual funds could range from a very minor part of 100% to a number that is many times 100%.

Lower portfolio turnover is better. Higher turnover increases hidden fund transactions costs, which tend NOT to be recouped through better performance. Look for single-digit and very low double-digit annual portfolio turnover rates in the ETFs that you purchase.

The only exception is shorter-duration bond funds, which by their very nature must be replenished more frequently and thus tend to have higher turnover ratios. Nevertheless, you can still use the turnover to detect excessive turnover. For example, if a short-term bond fund has an average duration of two years, then around 50% would be its natural portfolio turnover ratio.

Higher fund turnover means higher securities trading costs, which reduces fund performance.

Short-term fund trading is a zero-sum game played against other very well-informed securities market traders. On average, higher fund turnover is far more likely to result in lower investment fund performance — instead of superior risk-adjusted performance.

Higher stock and bond fund turnover indicates that portfolio managers are more active in buying and selling and/or that the fund index chosen is inherently more active. When there are other funds within an asset class with lower turnover, funds with noticeably higher turnover are more likely to be pursuing a more active strategy supposedly targeting superior returns. The fund manager hopes that his or her short-term speculative insights will allow the fund to beat other funds.

Most often, however, the very active investment fund manager will be wrong about the supposed virtues of more frequent trading. As fund trading increases, even higher performance is required just to break-even and cover the incremental trading costs.

The primary impact of excess turnover is to drive up trading costs, which tend not to be visible to individual investors. Such trading costs include brokerage commissions, the bid/ask spread, and the market impact, if mutual fund trading causes the bid-ask spread to move temporarily to absorb higher trading volume.

The fund turnover ratio serves as a visible proxy to measure the more hidden securities trading costs of more active funds

Such securities trading costs are not detailed in the information that is easily available to fund investors. Trading costs are not paid out of the management expense ratio, but instead trading costs directly reduce the reported gross investment fund performance of the fund's securities portfolio. When compared to funds within an asset class, a fund's turnover ratio gives a good indication of fund activism.

The great majority of actively managed funds with high turnover do not demonstrate better investment fund performance results, after the additional trading costs are taken into consideration. Furthermore, no reliable way has been shown to identify beforehand the minority of higher turnover funds that will eventually do better. You are far more likely to pick from the majority of higher turnover funds that will do worse — sometimes much worse — because of their added costs.

Section 3.5: Avoid actively managed funds

In the research literature, actively managed mutual funds have a poor record of risk adjusted performance relative to passively managed index funds. Their excessive trading drives up costs and when they are very large their trading temporarily affects market prices to their detriment of their shareholders.

Active ETFs have different problems, but they still have problems. First, the good news is that there are relatively few actively managed ETFs, even though more have been introduced to the market in recent years. Unlike actively managed mutual funds that can hide their investment changes, ETFs cannot. Regulatory requirements still allow for delayed reporting of mutual fund portfolio composition by many months, but ETF composition is known daily to outsiders.

No actively managed ETFs are listed in this book. If an ETF registered with the SEC as an active fund, then they have been excluded. In case your worry that this exclusion is arbitrary, you should also note that these active ETFs also charge significantly higher management expenses compared to passive index ETFs within particular asset classes. All active ETFs were already eliminated because of their much higher management expenses. Double checking the data, I found that all active ETFs classified as active in SEC reporting also would have been eliminated because of their much higher expenses.

In an earlier chapter, I also noted that there were a variety of forms of ETFs and other exchange-traded products (ETPs). In particular, certain leveraged and/or inverse long and short strategy ETFs can have surprising performance and volatility characteristics. Leveraged and inverse ETFs tend not to be appropriate for long-term buy-and-hold investors. Investor might not obtain the returns that they expect with these ETFs, even if the market moves in the desired direction. Leveraged and inverse ETFs tend not to be appropriate for long-term buy-and-hold investors.

You should note that when the input ETF data set indicated that an ETF was either an inverse and leveraged ETF, it was also excluded from this book. Again, in case your worry whether this exclusion of inverse and leveraged ETFs is arbitrary, you should note that all these inverse and leveraged ETFs were also eliminated because of their much higher management expenses.

Before you invest in any leveraged or inverse ETF, see this SEC webpage:

* SEC “Updated Investor Bulletin: Leveraged and Inverse ETFs” Feb. 23, 2023

https://www.sec.gov/investor/pubs/leveragedetfs-alert

Section 3.6: Choose more mature ETFs

The fund industry throws a whole lot of new ETF spaghetti on the wall to see what will stick. Individual investor assets and "advised" assets run to investment funds with lucky streaks, because they chase after past performance. Many small, new funds become accidental successes — at least successes for their fund company parent.

Since most ETFs are just index funds, success with the majority of new ETFs is largely a function of lucky market timing for the index itself and not apparently clever securities selection. Sometimes narrowly constructed indexes are designed cynically to cherry pick investment history. The problem with cherry picking indexes is that the cherries tend not to re-grow.

The longer experience of the mutual fund industry is informative about the risks of investing in very young funds. The most significant problem is that performance chasing investors will buy into hot investment funds with high fees, but not pull out their money when performance cools off or turns to ice. These investors keep hoping for a revival of prior hot performance and they leave in their money and keep paying excessive fees. However, when new funds fail to grow, they are very likely to get shot and/or be eaten by another fund. This is also becoming a regular feature of the ETP market, just like it has been in the mutual fund industry for a long time.

To avoid participating in this frenetic new fund infanticide process, only pick funds that have been in business for at least a few years and have built up sufficient assets. With ETFs two years is probably enough.

You should note that in screening ETFs for inclusion in the tables of this book, a hard and fast rule about fund maturity was not applied. However, any fund younger than two years that was a candidate for inclusion in this book's tables was inspected. However, if a new fund had low fees and was sponsored by an ETF fund company with a reliable track record of launching successful, low-cost ETFs that fund would be included, even if it was younger than two years.

Small new mutual funds with stellar investment fund performance records attract investor assets

Small new ETFs can get lucky. Very short, but apparently stellar, records of accomplishment attract investors. These funds can live to see other days, if new assets flow in fast enough. If the asset base grows quickly enough then could enable the new fund to grow the management expenses it takes in without increasing its annual management expense ratio. However, if a fund is not so lucky, its standalone management expenses will not disappear.

You should pay close attention the expenses of a very young fund and the expense-related footnotes in its prospectus. It is common for fund families to subsidize the management expenses

of new funds for a time. By keeping the management expense ratio down, the funds also can temporarily inflate performance – compared to the lower net performance that would have been reported had its unsubsidized management expense ratio been higher.

However, fund companies do not want to subsidize the costs of their small, languishing funds for an extended period, and the pressure will be on for the fund to "stand on its own." Therefore, you need to watch for upward creep in the management expense ratio of a very young fund over time. Keep in mind that, of course, the higher a fund's expenses, the more likely it is that the fund's net returns will fall short, when compared to a passive broad market index benchmark.

The investment fund industry's lame puppies just get shot

Another problem is what happens to small mutual funds that do not grow and that are subsequently put out of their misery. Mutual funds are like dogs in some respects. They must grow up quickly in just a few years. However, if they get caught in traffic at the wrong time on "The Street," they may get run over or be eaten by a bigger dog.

Rarely do lousy young mutual funds fold up and refund money to investors. Why confess to the emperor having no clothing and give back assets to investors, when those poorly performing fund assets could still yield fees? When new mutual funds do no attract enough assets, these "failed" funds (along with your invested and diminished assets) most often will get merged into other funds controlled by the fund family. Unfortunately, the mutual fund research shows that newer failed funds tend to get merged into larger mutual funds with noticeably inferior historical performance. Investment fund companies do not want to take any of the luster off their currently hot funds, by blending in assets from these inferior mutual funds that they euthanize. Therefore, more likely than not your money will get tossed into one of their bigger mutual funds with "doggy" performance.

In the first half of 2023, 113 ETFs closed according to etf.com. The ETP fund industry closed about 126 ETFs and ETNs during 2019 according to an April 21, 2020 "ETF Closures" report by Heather Bell on the etf.com website. This ETF closures report also noted that in the first calendar quarter of 2020 funds closed at an accelerated rate. From January 1, 2020 through March 31,2020, a whopping 89 funds had already announced closure.

The "good news" for ETFs compared to mutual funds, with respect to this fund infanticide problem, is that ETFs that are put out of their misery have cashed out their investors. Of course, this good news leaves the investor with the unanticipated problem of deciding where to reinvest their money, and perhaps paying taxes forced by the shutdown, if there was appreciation.

Nevertheless, the suboptimal merger practices of mutual funds could be just around the corner for ETFs, as well. In September 2013, the SEC issued Guidance Update No. 2013-06, which was entitled: "Merger of Two Exchange-traded Funds." The SEC wrote that "the staff has received an inquiry regarding whether an ETF may merge with another affiliated ETF ..." The guidance provided by the SEC stated that the SEC would not stand in the way of such a merger, as long as the merger meets: "... all applicable disclosure, registration, shareholder approval and other requirements." You can read this short SEC Guidance Update here:

http://www.sec.gov/divisions/investment/guidance/im-guidance-2013-06.pdf

Fund innovation to meet investor demand?

Investment fund companies always argue that they are trying to offer innovative new stock and bond funds to meet evolving "investor demand." This is largely rubbish. Most fund companies are trying to get your assets into their funds and make a profit off the fees. A true innovation motive is quite unlikely, because tens of thousands of mutual funds and ETFs of all types already exist worldwide.

A more cynical view of this frenetic fund birthing process is that fund companies recognize that fund performance is much more a matter of luck than skill. If fund families keep forming new funds, then some of these new funds will perform better by chance than the average fund within a particular investment category.

In the Warner Brothers movie 300, the Spartans tossed to their deaths those babies whom they deemed to be inferior. Investment fund companies also are quite Spartan in this respect. Unfortunately, most fund companies do not extend this Spartan mentality to the management expenses that they charge investors across all their funds.

The founder of the Vanguard Group, John Bogle, had a similar opinion of innovation in the financial services industry. He said, "One thing you can easily say is that we're over-innovated in the financial markets. We innovate because we find a "product" – a word I detest using in this business – that we can sell and make a lot of money on. That's the system. That's the way capitalism works. But with these brilliant quantitative croupiers taking those unusual derivative risks that they may not even understand, the more they take, the less the investor earns. An asset delivers a certain return over time, and trading back and forth with one another doesn't increase that return. Since trading is costly, it actually reduced the return. We've complicated the system. Innovation makes it worse." (Journal of Indexes, September/October 2013, Volume 16, No. 5, p. 40)

Section 3.7: Avoid very small ETFs

A minimum total asset base is required to amortize ETF expenses

Small ETFs cannot operate efficiently. They need a minimum critical mass of assets to fund required management and trading expenses. Simply avoid very small funds. Minimum required assets for a fund to have a reasonable level of efficiency are probably in the $100 million range.

In performing your due diligence on the funds you are considering, in many cases you can set a much higher minimum for the ETFs you choose. Most ETFs in this book have hundreds of millions or even billions of dollars in invested assets.

Certain narrower asset categories, such as sector funds, usually have fewer invested assets than more broadly diversified asset classes, and some relatively new funds may have a smaller

but rapidly growing asset base. You should look at the asset base, the age of fund, the sponsoring vendor's commitment to a broad line of low-cost ETFs, etc. and make your own judgment whether the fund you intend to purchase will have enough assets to operate efficiently in the future.

Note that the author exercised some judgement regarding inclusion of small funds near the $100 million asset threshold. Factors influencing these inclusion judgements were:

1) whether other much larger and established low-cost funds were available in the same market segment,
2) whether the market segment was characterized by smaller versus larger funds,
3) whether a small fund was very new and was offered by a fund family that had a record of growing invested assets across their various funds, and
4) whether the fund had been in existence for enough years to demonstrate that the invested asset base was not likely to increase.

To keep things in perspective, if an ETF has a management expense ratio of .25%, then $100 million in assets would generate about $250,000 per year, which is a rather trivial sum in the world of investment management. This is why even greater levels of invested assets are preferred. However, investment fund companies with numerous ETFs can obtain increased operational economies of scale across their family of funds. This allows them to operate smaller funds efficiently with lower expenses and reduces the risk that these smaller funds will be shut due to lack of profitability as assets grow.

The 2012 demise of Scottrade's Focus Morningstar Index ETFs

I quote below what I wrote about the Focus Morningstar ETF fund family in January of 2012 in an earlier annual edition of this book. I have retained this section, because it is a useful historical illustration of the problem when investment funds are too small.

A special note on Scottrade's Focus Morningstar Index ETFs (from 2012)

"Scottrade has acquired FocusShares and is offering some commission-free trading ETF funds that track some newer Morningstar indexes. While these ETFs carry a very low annual expense ratio of .05% per year, at this writing, these ETFs each hold only a few million dollars in total portfolio assets according to available data.

Of necessity, therefore, these funds must be heavily subsidized by Scottrade. They can only be sustained economically in the market without cost subsidies though a very substantial increase in invested assets.

"There are well-established competitive commission-free trading alternatives from other vendors with slightly higher expenses and many tens of billions of invested assets. These established ETF alternatives track older, well-understood market indexes. These competitive ETFs also trade with relatively narrow bid/ask spreads and many are available commission free, as well.

"Scottrade's relatively new Focus Morningstar ETFs are NOT included in the ETF lists in this book, even though they have very low management expenses. Over time, should Scottrade succeed in attracting sufficient assets to these funds to allow them to exist unsubsidized in the market, then they will be added in future updates of this book."

My follow-up note:

In August of 2012, the FocusShares subsidiary of Scottrade announced that its board had decided to liquidate all 15 of its ETFs by the end of August 2012. Collectively, these 15 ETFs had attracted only about $100 million in net assets, when liquidation was announced.

Section 3.8: Screen to eliminate significantly inferior fund performance

Use the other screening criteria above, before evaluate historical investment fund performance. Very inferior historical performance could be a slight indicator of possibly inferior future performance. However, after you have screened funds using the other criteria listed above, you will have already eliminated all diversified funds with significantly inferior performance. In effect, this last screening criteria is redundant.

The valid use of fund performance data needs to be stated explicitly, because the very first thing that a large majority of investors will look for is the historical performance record of a fund. However, those investors are not looking to eliminate significantly poor performance. Instead, they are looking for superior past performance, so that they can toss their money in after the fact and naively hope that the performance trend will continue.

Pay attention to the fine print in EVERY prospectus that says that past performance does not indicate future performance, because this has been shown to be true. Ignore all the fund industry's selective marketing of only their past winners. Individuals need to move beyond their naive and flawed notions about projecting superior historical investment performance into the future.

Modern, highly competitive, and real-time securities markets are auction price setting mechanisms that force the mass of smart and not-so-smart professional and amateur investors to accept average returns over time. Only very poor past investment fund performance tends to indicate potentially sub-par performance in the future, and that is probably itself due to higher costs. Therefore, eliminate only the very worst of historical performance during fund screening and choose from the remainder — despite whether a fund has had superior, average, or even somewhat below average performance in the past.

The bad news for performance chasing investors is that the research literature shows that superior or even average historical fund performance tells you ABSOLUTELY NOTHING about how a fund will perform in the future. This can be one of the hardest things for investors to understand. Their gut instincts tell them to pay attention to performance, but the research has shown that better past performance is irrelevant, when choosing which particular securities to buy.

When you buy an index fund, you should get close to the return for that index - less whatever fees you choose to pay. Superior historical performance is just a mirage that makes too many naive investors buy certain funds, but only after their superior performance is likely to have waned. Because the financial industry and the financial press keep pushing historical performance information in front of you, you need consciously to ignore it and instead focus on only buying funds with lower costs.

Chapter 4: The lowest cost global & international equity ETFs trading on US exchanges

Section 4.1: Global broadly diversified equity ETFs

Table 4.1.1 - Global & international total market equity ETFs

Global including US

Vanguard Total World Stock ETF -- 0.06% exp. -- VT

SPDR Portfolio MSCI Global Stock Market ETF -- 0.09% -- SPGM

Invesco MSCI Global Climate 500 ETF -- 0.10% exp. -- KLMT

iShares Global Equity Factor ETF -- 0.20% exp. -- GLOF

iShares MSCI All Country World Min. Vol. ETF -- 0.20% exp. -- ACWV

International excluding US/North America

Vanguard FTSE All-World ex-US ETF -- 0.04% exp. -- VEU

Vanguard Total International ETF -- 0.05% exp. -- VXUS

iShares Core MSCI Total International ETF -- 0.07% exp. -- IXUS

Vanguard FTSE All-World ex-US Small Cap ETF -- 0.08% exp. -- VSS

Vanguard ESG International Stock ETF-- 0.10% exp. -- VSGX

Dimensional International Core Equity Market ETF -- 0.18% exp. – DFAI

Goldman Sachs Market Beta Total International Equity ETF -- 0.18% exp. -- GXUS

Dimensional International Core Equity 2 ETF -- 0.23% exp. -- DFIC

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 4.1.2 - Global & international dividend equity ETFs

Schwab International Dividend Equity ETF -- 0.08% exp. -- SCHY

Vanguard International Dividend Appreciation ETF -- 0.10% exp. -- VIGI

Vanguard International High Dividend Yield ETF -- 0.17% exp. -- VYMI

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Section 4.2: Developed markets equity ETFs

Table 4.2.1 (A) - Broad developed markets equity ETFs (excluding US)

Vanguard FTSE Developed Markets ETF -- 0.03% exp. -- VEA

Schwab International Equity ETF -- 0.03% exp. -- SCHF

iShares Core MSCI International Developed Markets ETF -- 0.04% exp. -- IDEV

iShares Core MSCI EAFE ETF -- 0.07% exp. -- IEFA

Vanguard ESG International ETF -- 0.10% exp. -- VSGX

iShares ESG Aware MSCI EAFE ETF -- 0.21% exp. -- ESGD

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 4.2.1 (B) – Regional developed markets equity ETFs (excluding US)

Vanguard FTSE Europe ETF -- 0.06% exp. -- VGK

SPDR Portfolio Europe ETF -- 0.07% exp. -- SPEU

Vanguard FTSE Pacific ETF -- 0.07% exp. -- VPL

Franklin FTSE Europe ETF -- 0.09% exp. -- FLEE

iShares Core MSCI Europe ETF -- 0.09% exp. -- IEUR

iShares Core MSCI Pacific ETF -- 0.09% exp. -- IPAC

JPMorgan BetaBuilders Europe ETF -- 0.09% exp. -- BBEU

JPMorgan BetaBuilders Developed Asia ex-Japan ETF -- 0.19% exp. -- BBAX

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 4.2.2(a) - Developed markets core large cap equity ETFs

SPDR Portfolio World ex-US ETF -- 0.03% exp. -- SPDW

BNY Mellon International Equity ETF -- 0.04% exp. -- BKIE

IQ FTSE International Equity Currency Neutral ETF -- 0.20% exp. -- HFXI

Schwab Fundamental International Large Company ETF -- 0.25% exp. -- FNDF

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 4.2.2(b) - Developed markets value & growth large cap equity ETFs

Avantis International Large Cap Value ETF -- 0.25% exp. -- AVIV

Dimensional International Value ETF -- 0.27% exp. -- DFIV

iShares Edge MSCI International Value Factor ETF -- 0.30% exp. -- IVLU

iShares MSCI EAFE Value ETF -- 0.33% exp. -- EFV

iShares MSCI EAFE Growth ETF -- 0.36% exp. -- EFG

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 4.2.3 - Developed markets mid & small cap equity ETFs

Mid Cap

Invesco FTSE RAFI Developed Markets ex-U.S. Small-Mid -- 0.47% exp. – PDN

WisdomTree International MidCap Dividend ETF -- 0.58% exp. – DIM

Small Cap

Schwab International Small Cap Equity ETF -- 0.08% exp. -- SCHC

iShares Intl Small-Cap Equity Factor ETF -- 0.23% exp. – ISCF

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 4.2.4 - Developed markets dividend equity ETFs

Xtrackers MSCI EAFE High Dividend Yield ETF -- 0.09% exp. – HDEF

iShares International Dividend Growth ETF -- 0.15% exp. -- IGRO

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 4.2.5 (A) - Developed markets multiple-factor equity ETFs

iShares International Equity Factor ETF -- 0.16% exp. -- INTF

Hartford Multifactor Developed Markets (ex-US) ETF -- 0.29% exp. -- RODM

SPDR MSCI EAFE Strategic Factors ETF -- 0.30% exp. -- QEFA

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 4.2.5 (B) - Developed markets specific-factor equity ETFs

JPMorgan BetaBuilders International Equity ETF -- 0.07% exp. -- BBIN

JPMorgan International Research Enhanced Equity ETF -- 0.24% exp. -- JIRE

Schwab Fundamental International Large Co. ETF -- 0.25% exp. -- FNDF

Goldman Sachs ActiveBeta World Low Vol Plus Equity ETF -- 0.25% exp. -- GLOV

Goldman Sachs ActiveBeta International Equity ETF -- 0.25% exp. – GSIE

Dimensional International High Profitability ETF -- 0.28% exp. -- DIHP

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 4.2.5 (C) - Developed markets ESG & quality equity ETFs

iShares ESG Advanced MSCI EAFE ETF -- 0.12% exp. -- DMXF

IQ Candriam ESG International Equity ETF -- 0.15% exp. -- IQSI

Dimensional International Sustainability Core 1 ETF -- 0.24% exp. -- DFSI

Invesco S&P International Developed Quality ETF -- 0.29% exp. – IDHQ

iShares Edge MSCI Intl Quality Factor ETF -- 0.30% exp. -- IQLT

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Section 4.3: Emerging markets equity ETFs

Table 4.3.1 - Broad emerging markets equity ETFs

Vanguard FTSE Emerging Markets ETF -- 0.07% exp. -- VWO

SPDR Portfolio Emerging Markets ETF -- 0.07% exp. -- SPEM

Schwab Emerging Markets Equity ETF -- 0.07% exp. -- SCHE

iShares Core MSCI Emerging Markets ETF -- 0.09% exp. -- IEMG

iShares MSCI Emerging Markets Min. Volatility ETF -- 0.26% exp. -- EEMV

iShares MSC ESG Aware I Emerging Markets ETF -- 0.26% exp. -- ESGE

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Table 4.3.2 - Emerging markets large cap equity ETFs

iShares Emerging Markets Equity Factor ETF -- 0.26% exp. -- EMGF

iShares MSCI Emerging Markets ex China ETF -- 0.25% exp. -- EMXC

WisdomTree Emerging Markets ex-State-Owned Ent. Fund -- 0.32% exp. -- XSOE

Schwab Fundamental Emerging Markets Co. ETF -- 0.39% exp. – FNDE

Dimensional Emerging Markets High Profitability ETF -- 0.41% exp. -- DEHP

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Chapter 5: The lowest cost US equity ETFs trading on US exchanges

Section 5.1: Broad US equity ETFs

Table 5.1.1 - US broad market equity ETFs

JPMorgan BetaBuilders U.S. Equity ETF -- 0.02% exp. -- BBUS

iShares Core S&P Total U.S. Stock Market ETF -- 0.03% exp. -- ITOT

iShares Morningstar U.S. Equity ETF -- 0.03% exp. -- ILCB

Franklin U.S. Equity Index ETF -- 0.03% exp. -- USPX

Schwab U.S. Broad Market stock ETF -- 0.03% exp. -- SCHB

SPDR Portfolio S&P1500 Composite Stock ETF -- 0.03% exp. -- SPTM

Vanguard Total Stock Market ETF -- 0.03% exp. -- VTI

Vanguard Russell 3000 stock ETF -- 0.07% exp. -- VTHR

Dimensional U.S. Equity ETF -- 0.09% exp. -- DFUS

Humankind U.S. Stock ETF -- 0.11% exp. -- HKND

Dimensional U.S. Core Equity Market ETF -- 0.12% exp. -- DFAU

Avantis U.S. Equity ETF -- 0.15% exp. -- AVUS

Dimensional U.S. Core Equity 2 ETF -- 0.17% exp. -- DFAC

iShares Dow Jones U.S. ETF -- 020% exp. -- IYY

iShares Russell 3000 ETF -- 0.20% exp. -- IWV

Fidelity NASDAQ Composite Index ETF -- 0.21% exp. – ONEQ

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 5.1.2 (A)- US multiple factor & strategy equity ETFs

iShares US Equity Factor ETF -- 0.08% exp. -- LRGF

SPDR MSCI USA Strategic Factors ETF -- 0.15% exp. -- QUS

Franklin U.S. Large Cap Multifactor Index ETF -- 0.15% exp. -- FLQL

Xtrackers Russell US Multifactor ETF -- 0.17% exp. -- DEUS

JPMorgan Diversified Return U.S. Equity ETF -- 0.18% exp. -- JPUS

Vanguard U.S. Multifactor ETF -- 0.18% exp. -- VFMF

SPDR Russell 1000 Yield Focus ETF -- 0.20% exp. -- ONEY

FlexShares Morningstar US Market Factor Tilt ETF -- 0.25% exp. -- TILT

Schwab Fundamental U.S. Broad Market Index ETF -- 0.25% exp. – FNDB

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Table 5.1.2 (B)- US growth and value factor & strategy equity ETFs

iShares Core U.S. Growth ETF -- 0.04% exp. -- IUSG

iShares Core U.S. Value ETF -- 0.04% exp. -- IUSV

iShares MSCI USA Value Factor ETF -- 0.15% exp. -- VLUE

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 5.1.2 (C)- US size-related factor & strategy equity ETFs

Goldman Sachs ActiveBeta U.S. Large Cap Equity ETF -- 0.09% exp. -- GSLC

SPDR SSGA U.S. Large Cap Low Volatility Index ETF -- 0.12% exp. -- LGLV

Principal U.S. Mega-Cap Multi-Factor Index ETF -- 0.12% exp. -- USMC

iShares MSCI USA Size Factor ETF -- 0.15% exp. -- SIZE

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 5.1.2 (D)- US single factor & strategy equity ETFs

Invesco PureBeta MSCI USA ETF -- 0.04% exp. -- PBUS

Goldman Sachs MarketBeta U.S. Equity ETF -- 0.07% exp. -- GSUS

iShares MSCI USA Equal Weighted ETF -- 0.09% exp. -- EUSA

Vanguard U.S. Quality Factor ETF -- 0.13% exp. -- VFQY

iShares MSCI USA Quality Factor ETF -- 0.15% exp. -- QUAL

iShares MSCI USA Minimum Volatility Factor ETF -- 0.15% exp. -- USMV

iShares MSCI USA Momentum Factor ETF -- 0.15% exp. -- MTUM

SPDR Russell 1000 Low Volatility Focus ETF -- 0.20% exp. -- ONEV

Invesco Russell 1000 Equal Weight ETF -- 0.20% exp. -- EQAL

SPDR MSCI USA Gender Diversity Index ETF -- 0.20% exp. – SHE

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Table 5.1.3 - US dividend equity ETFs

iShares Core Dividend ETF -- 0.05% exp. -- DIVB

Schwab US Dividend Equity ETF -- 0.06% exp. -- SCHD

Vanguard High Dividend Yield ETF -- 0.06% exp. -- VYM

Vanguard Dividend Appreciation ETF -- 0.06% exp. -- VIG

SPDR S&P 500 High Dividend ETF -- 0.07% exp. -- SPYD

Invesco Dow Jones Industrial Average Dividend ETF -- 0.07% exp. -- DJD

iShares Core High Dividend ETF -- 0.08% exp. -- HDV

iShares Core Dividend Growth ETF -- 0.08% exp. -- DGRO

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Section 5.2: US large cap equity ETFs

Table 5.2.1 - US S&P 500 large cap core equity ETFs

Vanguard S&P 500 ETF -- 0.03% exp. -- VOO

iShares Core S&P 500 ETF -- 0.03% exp. -- IVV

SPDR S&P 500 ETF -- 0.09% exp. -- SPY

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 5.2.2 - US megacap and very large cap core equity ETFs

Vanguard Mega Cap ETF -- 0.07% exp. -- MGC

iShares Russell Top 200 ETF -- 0.15% exp. -- IWL

SPDR Dow Jones Industrial Average ETF Trust -- 0.16% exp. -- DIA

Invesco S&P 500 Top 50 ETF -- 0.20% exp. -- XLG

iShares S&P 100 ETF -- 0.20% exp. -- OEF

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 5.2.3 - US other large cap core equity ETFs

SPDR Portfolio Large Cap ETF -- 0.02% exp. -- SPLG

Schwab U.S. Large-Cap ETF -- 0.03% exp. -- SCHX

Schwab 1000 Index ETF -- 0.03% exp. -- SCHK

Vanguard Large-Cap ETF -- 0.04% exp. -- VV

Vanguard Russell 1000 ETF -- 0.07% exp. -- VONE

WisdomTree U.S. Large Cap Fund ETF -- 0.08% exp. -- EPS

iShares Russell 1000 ETF -- 0.15% exp. -- IWB

Invesco QQQ Trust ETF -- 0.20% exp. -- QQQ

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 5.2.4 - US large cap growth equity ETFs

Schwab U.S. Large-Cap Growth ETF -- 0.04% exp. -- SCHG

SPDR S&P 500 Growth ETF -- 0.04% exp. -- SPYG

Vanguard Growth ETF -- 0.04% exp. -- VUG

Vanguard Mega Cap 300 Growth ETF -- 0.07% exp. -- MGK

Vanguard Russell 1000 Growth ETF -- 0.07% exp. -- VONG

Vanguard S&P 500 Growth ETF -- 0.07% exp. -- VOOG

Invesco NASDAQ 100 ETF -- 0.15% exp. -- QQQM

Invesco NASDAQ Next Gen 100 ETF -- 0.15% exp. -- QQQJ

iShares S&P 500 Growth ETF -- 0.18% exp. -- IVW

iShares Russell 1000 Growth ETF -- 0.18% exp. -- IWF

iShares Russell Top 200 Growth ETF -- 0.20% exp. – IWY

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Table 5.2.5 - US large cap value equity ETFs

Schwab U.S. Large-Cap Value ETF -- 0.04% exp. -- SCHV

SPDR S&P 500 Value stock ETF -- 0.04% exp. -- SPYV

iShares Morningstar Value ETF -- 0.04% exp. -- ILCV

Vanguard Value stock ETF -- 0.04% exp. -- VTV

Vanguard Mega Cap Value ETF -- 0.07% exp. -- MGV

Vanguard Russell 1000 Value ETF -- 0.07% exp. -- VONV

Vanguard S&P 500 Value ETF -- 0.07% exp. -- VOOV

SPDR S&P 1500 Value Tilt ETF -- 0.12% exp. -- VLU

WisdomTree U.S. Value Fund -- 0.12% exp. -- WTV

Vanguard U.S. Value Factor ETF -- 0.13% exp. -- VFVA

iShares S&P 500 Value ETF -- 0.18% exp. -- IVE

iShares Russell 1000 Value ETF -- 0.18% exp. -- IWD

iShares Russell Top 200 Value ETF -- 0.20% exp. -- IWX

Goldman Sachs JUST U.S. Large Cap Equity ETF -- 0.20% exp. – JUST

Dimensional US Marketwide Value ETF -- 0.21% exp. -- DFUV

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 5.2.6 (A)- US large cap multi-factor + fundamental equity ETFs

Invesco S&P 500 QVM Multi-Factor ETF -- 0.11% exp. -- QVML

Hartford Multifactor US Equity ETF -- 0.19% exp. -- ROUS

Invesco RAFI Strategic US ETF -- 0.19% exp. -- IUS

Schwab Fundamental U.S. Large Company Index ETF -- 0.25% exp. -- FNDX

John Hancock Multifactor Large Cap ETF -- 0.29% exp. -- JHML

Invesco Russell 1000 Dynamic Multifactor ETF -- 0.29% exp. – OMFL

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 5.2.6 (B) - US large cap value and growth fundamental equity ETFs

JPMorgan U.S. Value Factor ETF -- 0.12% exp. -- JVAL

Invesco S&P 500 Enhanced Value ETF -- 0.13% exp. -- SPVU

Avantis U.S. Large Cap Value ETF -- 0.15% exp. -- AVLV

Fidelity Value Factor ETF -- 0.15% exp. -- FVAL

VictoryShares US Value Momentum -- 0.20% exp. -- ULVM

Dimensional US Large Cap Value ETF -- 0.22% exp. -- DFLV

Nuveen ESG Large-Cap Growth ETF -- 0.26% exp. -- NULG

Nuveen ESG Large-Cap Value ETF -- 0.26% exp. -- NULV

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 5.2.6 (C) - US large cap dividend fundamental equity ETFs

ProShares S&P 500 Dividend Aristocrats ETF -- 0.35% exp. -- NOBL

VictoryShares Dividend Accelerator ETF -- 0.35% exp. – VSDA

VictoryShares US Large Cap High Div. Volatility Weighted ETF -- 0.42% exp. -- CDL

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Table 5.2.6 (D) - US large cap ESG & sustainable equity ETFs

iShares ESG Screened S&P 500 ETF -- 0.08% exp. -- XVV

NYLI Candriam U.S. Large Cap Equity ETF -- 0.09% exp. -- IQSU

Vanguard ESG U.S. Stock ETF -- 0.09% exp. -- ESGV

Xtrackers MSCI U.S.A. ESG Leaders Equity ETF -- 0.09% exp. -- USSG

iShares ESG Advanced MSCI USA ETF -- 0.10% exp. -- USXF

SPDR S&P 500 ESG ETF -- 0.10% exp. -- EFIV

iShares ESG MSCI USA Leaders ETF -- 0.10% exp. -- SUSL

Xtrackers S&P 500 ESG ETF -- 0.10% exp. -- SNPE

Calvert US Large-Cap Core Responsible Index ETF -- 0.15% exp. -- CVLC

Avantis Responsible U.S. Equity ETF -- 0.15% exp. -- AVSU

iShares ESG Aware MSCI U.S.A. ETF -- 0.15% exp. -- ESGU

Dimensional US Sustainability Core 1 ETF -- 0.17% exp. -- DFSU

iShares MSCI U.S.A. ESG Select ETF -- 0.25% exp. -- SUSA

iShares MSCI KLD 400 Social ETF -- 0.25% exp. -- DSI

Global X S&P 500 Catholic Values ETF -- 0.29% exp. – CATH

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 5.2.6 (E) - US large cap equal weight fundamental equity ETFs

Goldman Sachs Equal Weight U.S. Large Cap ETF -- 0.09% exp. -- GSEW

Invesco S&P 500 Equal Weight ETF -- 020% exp. -- RSP

Invesco S&P 100 Equal Weight ETF -- 0.25% exp. -- EQWL

ALPS Equal Sector Weight ETF -- 0.25% exp. – EQL

Direxion NASDAQ-100 Equal Weighted Index Shares -- 0.35% exp. -- QQQE

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 5.2.6 (F) - US large cap volatility fundamental equity ETFs

FlexShares US Quality Low Volatility Index Fund -- 0.08% exp. -- QLV

Vanguard U.S. Minimum Volatility ETF -- 0.13% exp. -- VFMV

Fidelity Low Volatility Factor ETF -- 0.15% exp. -- FDLO

iShares Edge MSCI Minimum Volatility U.S.A. ETF -- 0.15% exp. -- USMV

Invesco S&P 500 Low Volatility ETF -- 0.25% exp. -- SPLV

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 5.2.6 (G) - US large cap other factor + fundamental equity ETFs

Strive 500 ETF -- 0.05% exp. -- STRV

Engine No. 1 Transform 500 ETF -- 0.05% exp. -- VOTE

Goldman Sachs MarketBeta US 1000 Equity ETF -- 0.11% exp. -- GUSA

JPMorgan U.S. Quality Factor ETF -- 0.12% exp. -- JQUA

JPMorgan U.S. Momentum Factor ETF -- 0.12% exp. -- JMOM

SPDR S&P 1500 Momentum Tilt ETF -- 0.12% exp. -- MMTM

Vanguard U.S. Momentum Factor ETF -- 0.13% exp. -- VFMO

Invesco S&P 500 Momentum ETF -- 0.13% exp. -- SPMO

EA Bridgeway Blue Chip ETF -- 0.15% exp. -- BBLU

Fidelity Quality Factor ETF -- 0.15% exp. – FQAL

Fidelity Momentum Factor ETF -- 0.15% exp. -- FDMO

Invesco S&P 500 Quality ETF -- 0.15% exp. -- SPHQ

SPDR S&P 500 Fossil Fuel Free ETF -- 0.20% exp. -- SPYX

SPDR S&P Kensho New Economies Composite ETF -- 0.20% exp. -- KOMP

Dimensional US High Profitability ETF -- 0.21% exp. -- DUHP

Invesco S&P 500 High Beta ETF -- 0.25% exp. -- SPHB

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Section 5.3: US mid cap equity ETFs

Table 5.3.1 - US broad mid cap equity ETFs

SPDR Portfolio S&P 400 Mid Cap ETF -- 0.03% exp. -- SPMD

Schwab U.S. Mid-Cap ETF -- 0.04% exp. -- SCHM

Vanguard Mid-Cap ETF -- 0.04% exp. -- VO

BNY Mellon US Mid Cap Core Equity ETF -- 0.04% exp. -- BKMC

iShares Morningstar Mid-Cap ETF -- 0.04% exp. -- IMCB

iShares Core S&P Mid-Cap ETF -- 0.05% exp. -- IJH

JPMorgan BetaBuilders U.S. Mid Cap Equity ETF -- 0.07% exp. -- BBMC

Vanguard S&P Mid-Cap 400 ETF -- 0.07% exp. -- IVOO

Fidelity Small-Mid Multifactor ETF -- 0.15% exp. -- FSMD

iShares Russell 2500 ETF -- 0.15% exp. -- SMMD

iShares Russell Mid-Cap ETF -- 0.18% exp. -- IWR

SPDR S&P MidCap 400 ETF -- 0.24% exp. -- MDY

JPMorgan Market Expansion Enhanced Equity ETF -- 0.24% exp. -- JMEE

JPMorgan Diversified Return U.S. Mid Cap Equity ETF -- 0.24% exp. -- JPME

Invesco S&P MidCap Low Volatility Portfolio ETF -- 0.25% exp. – XMLV

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Table 5.3.2 - US mid cap growth equity ETFs

iShares Morningstar Growth ETF -- 0.04% exp. -- ILCG

iShares Morningstar Mid-Cap Growth ETF -- 0.06% exp. -- IMCG

Vanguard Mid-Cap Growth ETF -- 0.07% exp. -- VOT

SPDR S&P MidCap 400 Growth ETF -- 0.15% exp. -- MDYG

Vanguard S&P Mid-Cap 400 Growth ETF -- 0.15% exp. -- IVOG

iShares S&P Mid-Cap 400 Growth ETF -- 0.17% exp. – IJK

iShares Russell Mid-Cap Growth ETF -- 0.23% exp. -- IWP

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Table 5.3.3 - US mid cap value equity ETFs

iShares Morningstar Mid-Cap Value ETF -- 0.06% exp. -- IMCV

Vanguard Mid-Cap Value ETF -- 0.07% exp. -- VOE

Vanguard S&P Mid-Cap 400 Value ETF -- 0.10% exp. -- IVOV

SPDR S&P MidCap 400 Value ETF -- 0.15% exp. -- MDYV

iShares S&P Mid-Cap 400 Value ETF -- 0.18% exp. -- IJJ

iShares Russell Mid-Cap Value ETF -- 0.23% exp. – IWS

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 5.3.4 - US mid cap fundamental + factor equity ETFs

Invesco S&P MidCap 400 QVM Multi-Factor ETF -- 0.15% exp. -- QVMM

Invesco S&P MidCap Quality ETF -- 0.25% exp. -- XMHQ

Invesco S&P MidCap Low Volatility ETF -- 0.25% exp. -- XMLV

Invesco S&P MidCap Momentum ETF -- 0.35% exp. -- XMMO

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Section 5.4: US small & micro-cap equity ETFs

Table 5.4.1 (A) - US broad market small cap equity ETFs

SPDR Portfolio S&P 600 Small Cap ETF -- 0.03% exp. -- SPSM

Schwab U.S. Small-Cap ETF -- 0.04% exp. -- SCHA

iShares Morningstar Small-Cap ETF -- 0.04% exp. -- ISCB

Vanguard Small-Cap ETF -- 0.05% exp. -- VB

Vanguard Extended Market ETF -- 0.05% exp. -- VXF

iShares Core S&P Small-Cap ETF -- 0.06% exp. -- IJR

Vanguard Russell 2000 ETF -- 0.07% exp. -- VTWO

Vanguard S&P Small-Cap 600 ETF -- 0.07% exp. -- VIOO

JPMorgan BetaBuilders U.S. Small Cap Equity ETF -- 0.09% exp. -- BBSC

iShares Russell 2000 ETF -- 0.19% exp. – IWM

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 5.4.1 (B) - US factor small cap equity ETFs

SPDR SSGA US Small Cap Low Volatility Index ETF -- 0.12% exp. -- SMLV

Invesco S&P SmallCap 600 QVM Multi-Factor ETF -- 0.15% exp. – QVMS

iShares U.S. Small-Cap Equity Factor ETF -- 0.15% exp. -- SMLF

iShares ESG Aware MSCI U.S.A. Small-Cap ETF -- 0.17% exp. -- ESML

iShares MSCI U.S.A. Small-Cap Min Vol Factor ETF -- 0.20% exp. -- SMMV

Goldman Sachs ActiveBeta U.S. Small Cap Equity ETF -- 0.20% exp. -- GSSC

Invesco S&P Small Cap Low Volatility ETF -- 0.25% exp. – XSLV

VictoryShares US Small Mid Cap Value Mom. -- 0.30% exp. -- USVM

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 5.4.2 - US small cap growth equity ETFs

iShares Morningstar Small-Cap Growth ETF -- 0.06% exp. -- ISCG

Vanguard Small-Cap Growth ETF -- 0.07% exp. -- VBK

Vanguard Russell 2000 Growth ETF -- 0.10% exp. -- VTWG

Vanguard S&P Small-Cap 600 Growth ETF -- 0.10% exp. -- VIOG

SPDR S&P 600 Small Cap Growth ETF -- 0.15% exp. -- SLYG

iShares S&P Small-Cap 600 Growth ETF -- 0.18% exp. – IJT

iShares Russell 2000 Growth ETF -- 0.24% exp. -- IWO

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 5.4.3 - US small cap value equity ETFs

iShares Morningstar Small Cap Value ETF -- 0.06% exp. -- ISCV

Vanguard Small-Cap Value ETF -- 0.07% exp. -- VBR

Vanguard Russell 2000 Value ETF -- 0.10% exp. -- VTWV

Vanguard S&P Small-Cap 600 Value ETF -- 0.10% exp. -- VIOV

SPDR S&P 600 Small Cap Value ETF -- 0.15% exp. -- SLYV

iShares S&P Small-Cap 600 Value ETF -- 0.18% exp. – IJS

iShares Russell 2000 Value ETF -- 0.24% exp. -- IWN

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 5.4.4 - US small cap fundamental equity ETFs

Schwab Fundamental U.S. Small Company Index ETF -- 0.25% exp. -- FNDA

Invesco S&P SmallCap 600 Pure Value ETF -- 0.35% exp. -- RZV

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Chapter 6: The lowest cost international fixed income ETFs trading on US exchanges

Section 6.1: International fixed income ETFs

Table 6.1.1 - International developed markets fixed income ETFs

Broad Market

Vanguard Total World Bond ETF -- 0.05% exp. -- BNDW

Vanguard Total International Bond ETF -- 0.07% exp. -- BNDX

iShares Core International Aggregate ETF -- 0.07% exp. – IAGG

Dimensional Core Fixed Income ETF -- 0.17% exp. -- DFCF

Broad Market – Short Term

Dimensional Short-Duration Fixed Income ETF -- 0.16% exp. -- DFSD

Janus Henderson Short Duration Income ETF -- 0.23% exp. -- VNLA

Sovereign

iShares 1-3 Year International Treasury Bond ETF -- 0.35% exp. -- ISHG

iShares International Treasury Bond ETF -- 0.35% exp. -- IGOV

SPDR Bloomberg Short Term International Treasury Bond ETF -- 0.35% exp. -- BWZ

SPDR Bloomberg International Treasury Bond ETF -- 0.35% exp. -- BWX

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 6.1.2 - International emerging markets fixed income ETFs

Sovereign / Government

Vanguard Emerging Markets Government Bond ETF -- 0.15% exp. -- VWOB

VanEck J P Morgan Emerging Markets Local Curr. Bond ETF -- 0.30% exp. -- EMLC

iShares JP Morgan Emerging Markets Local Currency ETF -- 0.30% exp. -- LEMB

SPDR Bloomberg Emerging Markets Local Bond ETF -- 0.30% exp. -- EBND

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Chapter 7: The lowest cost US fixed income ETFs trading on US exchanges

Section 7.1: US broad market & corporate fixed income ETFs

Table 7.1.1 (A) - US broad maturities ETFs

Schwab U.S. Aggregate Bond ETF -- 0.03% exp. -- SCHZ

SPDR Portfolio Aggregate Bond ETF -- 0.03% exp. -- SPAB

iShares Core Total U.S. Bond Market ETF -- 0.03% exp. -- AGG

Vanguard Total Bond Market ETF -- 0.03% exp. -- BND

Vanguard Total Corporate Bond ETF -- 0.03% exp. -- VTC

iShares Broad USD Investment Grade Corp. Bond ETF -- 0.04% exp. – USIG

iShares Core Total USD Bond Market ETF -- 0.06% exp. -- IUSB

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 7.1.1 (B) - US modified broad maturities fixed income ETFs

JPMorgan BetaBuilders U.S. Aggregate Bond ETF -- 0.03% exp. -- BBAG

iShares ESG Aware U.S. Aggregate Bond ETF -- 0.10% exp. -- EAGG

iShares ESG Advanced Total USD Bond Market ETF -- 0.12% exp. -- EUSB

WisdomTree Bloomberg Yield Enhanced US Aggregate -- 0.12% exp. -- AGGY

Goldman Sachs Access Investment Grade Corp. Bond -- 0.14% exp. -- GIGB

Goldman Sachs Access U.S. Aggregate Bond ETF -- 0.14% exp. -- GCOR

iShares iBoxx USD Invest Grade Corporate Bond ETF -- 0.14% exp. -- LQD

WisdomTree Voya Yield Enhanced USD Universal Bond Fund -- 0.15% exp. -- UNIY

iShares Aaa - A Rated Corporate Bond ETF -- 0.15% exp. -- QLTA

Nuveen ESG U.S. Aggregate Bond ETF -- 0.15% exp. -- NUBD

iShares Yield Optimized Bond ETF -- 0.17% exp. -- BYLD

iShares Investment Grade Bond Factor ETF -- 0.18% exp. -- IGEB

iShares ESG Aware USD Corporate Bond ETF -- 0.18% exp. -- SUSC

PIMCO Investment Grade Corporate Bond ETF -- 0.23% exp. -- CORP

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 7.1.2 - US short maturities corporate fixed income ETFs

Schwab 1-5 Year Corporate Bond ETF -- 0.03% exp. -- SCHJ

Vanguard Short Term Corporate Bond ETF -- 0.03% exp. -- VCSH

iShares 1-5 Year Investment Grade Corporate Bond ETF -- 0.04% exp. -- IGSB

SPDR Portfolio Short Term Corporate Bond ETF -- 0.04% exp. -- SPSB

iShares 0-5 Year Investment Grade Corporate ETF -- 0.06% exp. -- SLQD

iShares Core 1-5 Year USD Bond ETF -- 0.06% exp. -- ISTB

iShares ESG Aware 1-5 Year USD Corporate Bond ETF -- 0.12% exp. -- SUSB

Fidelity Low Duration Bond Factor ETF -- 0.15% exp. – FLDR

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 7.1.3 - US intermediate maturities corporate fixed income ETFs

Schwab 5-10 Year Corporate Bond ETF -- 0.03% exp. -- SCHI

SPDR Portfolio Corporate Bond ETF -- 0.03% exp. -- SPBO

Vanguard Intermediate-Term Corporate Bond ETF -- 0.03% exp. -- VCIT

SPDR Portfolio Intermediate Term Corporate Bond ETF -- 0.04% exp. -- SPIB

iShares 5-10 Year Investment Grade Corporate Bond ETF -- 0.04% exp. -- IGIB

iShares Core 5-10 Year USD ETF -- 0.06% exp. -- IMTB

iShares iBonds Dec 2032 Term Corporate ETF -- 0.10% exp. -- IBDX

FlexShares Credit-Scored US Corporate Bond Index -- 0.15% exp. – SKOR

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 7.1.4 - US long maturities corporate fixed income ETFs

Vanguard Long-Term Corporate Bond ETF -- 0.03% exp. -- VCLT

iShares 10+ Year Inv. Grade Corporate Bond ETF -- 0.04% exp. -- IGLB

SPDR Portfolio Long Term Corporate Bond ETF -- 0.04% exp. -- SPLB

iShares Core 10+ Year USD Bond ETF -- 0.06% exp. -- ILTB

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 7.1.5 - US floating rate corporate fixed income ETFs

VanEck Investment Grade Floating Rate ETF -- 0.14% exp. -- FLTR

SPDR Bloomberg Investment Grade Floating Rate ETF -- 0.15% exp. -- FLRN

iShares Treasury Floating Rate Bond ETF -- 0.15% exp. -- TFLO

iShares Floating Rate Bond ETF -- 0.15% exp. -- FLOT

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 7.1.6 - US preferred & convertible corporate fixed income ETFs

iShares Convertible Bond ETF -- 0.20% exp. -- ICVT

Global X U.S. Preferred ETF -- 0.23% exp. -- PFFD

Global X Variable Rate Preferred ETF -- 0.25% exp. -- PFFV

SPDR Bloomberg Convertible Securities ETF -- 0.40% exp. -- CWB

VanEck Preferred Securities ex Financials ETF -- 0.40% exp. -- PFXF

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Section 7.2: US high yield fixed income ETFs

Table 7.2.1 - US broad high yield fixed income ETFs

SPDR Portfolio High Yield Bond ETF -- 0.05% exp. -- SPHY

Xtrackers USD High Yield Corporate Bond ETF -- 0.05% exp. -- HYLB

JPMorgan BetaBuilders USD High Yield Corporate Bond ETF -- 0.07% exp. -- BBHY

iShares Broad USD High Yield Corporate Bond ETF -- 0.08% exp. -- USHY

Xtrackers Low Beta High Yield Bond ETF -- 0.20% exp. -- HYDW

Xtrackers Short Duration High Yield Bond ETF -- 0.20% exp. -- SHYL

iShares Fallen Angels USD Bond ETF -- 0.25% exp. -- FALN

VanEck Fallen Angel High Yield ETF -- 0.25% exp. – ANGL

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 7.2.2 - US term-based & floating rate high yield fixed income ETFs

Short Maturities

iShares 0-5 Year High Yield Corporate Bond ETF -- 0.30% exp. -- SHYG

SPDR Bloomberg Short Term High Yield Bond ETF -- 0.40% exp. -- SJNK

Floating Rate

WisdomTree Floating Rate Treasury Fund ETF -- 0.15% exp. -- USFR

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Section 7.3: US government & agency fixed income ETFs

Table 7.3.1 - US government term-based fixed income ETFs

Ultra-short Maturities

BondBloxx Bloomberg Six Month Target Duration US Treasury ETF -- 0.03% exp. -- XHLF

BondBloxx Bloomberg One Year Target Duration US Treasury ETF -- 0.03% exp. -- XONE

iShares 0-3 Month Treasury Bond ETF -- 0.09% exp. -- SGOV

SPDR Bloomberg 1-3 Month T-Bill ETF -- 0.14% exp. -- BIL

SPDR Bloomberg 3-12 Month T-Bill ETF -- 0.14% exp. -- BILS

RBB Fund, Inc. - US Treasury 12 Month Bill ETF -- 0.15% exp. -- OBIL

US Treasury 3 Month Bill ETF -- 0.08% exp. -- TBIL

US Treasury 6 Month Bill ETF -- 0.15% exp. -- XBIL

Short Maturities

Vanguard Short-Term Treasury Index ETF -- 0.03% exp. -- VGSH

Vanguard Short Term Bond ETF -- 0.03% exp. -- BSV

SPDR Portfolio Short Term Treasury ETF -- 0.03% exp. -- SPTS

iShares Core 1-5 Year USD Bond ETF -- 0.06% exp. -- ISTB

Intermediate Maturities

Vanguard Intermediate-Term Treasury Index ETF -- 0.03% exp. -- VGIT

Vanguard Intermediate Term Bond ETF -- 0.03% exp. -- BIV

iShares Core U.S. Treasury ETF -- 0.05% exp. – GOVT

iShares Intermediate Government/Credit Bond ETF -- 0.20% exp. --GVI

Long Maturities

SPDR Portfolio Long Term Treasury ETF -- 0.03% exp. -- SPTL

Vanguard Long Term Bond ETF -- 0.03% exp. -- BLV

Vanguard Long-Term Treasury Index ETF -- 0.03% exp. -- VGLT

Vanguard Extended Duration Treasury ETF -- 0.05% exp. -- EDV

iShares Core 10+ Year USD Bond ETF -- 0.06% exp. -- ILTB

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 7.3.2 - US government & agency mortgage fixed income ETFs

Vanguard Mortgage-Backed Securities ETF -- 0.03% exp. --VMBS

iShares MBS ETF -- 0.04% exp. -- MBB

SPDR Portfolio Mortgage-Backed Bond ETF -- 0.04% exp. -- SPMB

iShares GNMA Bond ETF -- 0.10% exp. -- GNMA

iShares Agency Bond ETF -- 0.20% exp. -- AGZ

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 7.3.3 - US government inflation protected fixed income ETFs

Broad Maturities

Schwab U.S. TIPS ETF -- 0.03% exp. -- SCHP

Dimensional Inflation-Protected Securities ETF -- 0.11% exp. -- DFIP

Goldman Sachs Access Inflation Protected USD Bond ETF -- 0.12% exp. -- GTIP

SPDR Portfolio TIPS ETF -- 0.12% exp. -- SPIP

iShares TIPS Bond ETF -- 0.18% exp. -- TIP

Short Maturities

iShares 0-5 Year TIPS Bond ETF -- 0.03% exp. -- STIP

Vanguard Short-Term Inflation Protected Securities ETF -- 0.03% exp. -- VTIP

PIMCO 1-5 Year U.S. TIPS ETF -- 0.20% exp. -- STPZ

Intermediate Maturities

SPDR Bloomberg 1-10 Year TIPS ETF -- 0.15% exp. -- TIPX

FlexShares iBoxx 3-Year Target Duration TIPS ETF -- 0.18% exp. -- TDTT

FlexShares iBoxx 5-Year Target Duration TIPS ETF -- 0.18% exp. -- TDTF

Long Maturities

PIMCO 15+ Year U.S. TIPS ETF -- 0.20% exp. -- LTPZ

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 7.3.4 - US government treasury broad & intermediate term fixed income ETFs

Broad Maturities

iShares U.S. Treasury Bond ETF -- 0.05% exp. -- GOVT

Intermediate Maturities

Schwab Intermediate-Term U.S. Treasury ETF -- 0.03% exp. -- SCHR

SPDR Portfolio Intermediate Term Treasury ETF -- 0.03% exp. -- SPTI

Vanguard Intermediate-Term Treasury Index ETF -- 0.03% exp. -- VGIT

iShares 3-7 Year Treasury Bond ETF -- 0.15% exp. -- IEI

iShares 7-10 Year Treasury Bond ETF -- 0.15% exp. -- IEF

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 7.3.5 - US government treasury short- & long-term fixed income ETFs

Short Maturities

Schwab Short-Term U. S. Treasury ETF -- 0.03% exp. – SCHO

Vanguard Short-Term U. S. Treasury ETF -- 0.03% exp. -- VGSH

Goldman Sachs Access Treasury 0-1 Year ETF -- 0.12% exp. -- GBIL

SPDR Bloomberg 1-3 Month T-Bill ETF -- 0.14% exp. -- BIL

iShares 1-3 Year Treasury Bond ETF -- 0.15% exp. -- SHY

iShares Short Treasury Bond ETF -- 0.15% exp. – SHV

Long Maturities

SPDR Portfolio Long Term Treasury ETF -- 0.03% exp. -- SPTL

Vanguard Extended Duration Treasury ETF -- 0.05% exp. -- EDV

iShares 10-20 Year Treasury Bond ETF -- 0.15% exp. -- TLH

iShares 20+ Year Treasury Bond ETF -- 0.15% exp. -- TLT

PIMCO 25+ Year Zero Coupon U.S. Treasury ETF -- 0.15% exp. -- ZROZ

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Section 7.4: US municipal fixed income ETFs

Table 7.4.1 - US national municipal broad & intermediate term fixed income ETFs

Broad Maturities

Schwab Municipal Bond ETF -- 0.03% exp. -- SCMB

Vanguard Tax-Exempt Bond Index fixed income ETF -- 0.03% exp. -- VTEB

iShares National Muni Bond ETF -- 0.05% exp. -- MUB

Vanguard Short-Term Tax-Exempt Bond ETF -- 0.06% exp. -- VTES

Dimensional National Municipal Bond ETF -- 0.17% exp. – DFNM

SPDR Nuveen Bloomberg Municipal Bond ETF -- 0.23% exp. -- TFI

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 7.4.2 - US national municipal short term, long term & high yield fixed income ETFs

Short Maturities

iShares Short-Term National Muni Bond ETF -- 0.07% exp. -- SUB

VanEck Short Municipal ETF -- 0.07% exp. -- SMB

SPDR Nuveen Bloomberg Short Term Muni Bond ETF -- 0.20% exp. -- SHM

Intermediate Maturities

VanEck Intermediate Muni ETF -- 0.18% exp. -- ITM

Long Maturities

Xtrackers Municipal Infrastructure Revenue Bond ETF -- 0.15% exp. -- RVNU

VanEck Long Municipal ETF -- 0.24% exp. – MLN

High Yield

VanEck High-Yield Municipal Index ETF -- 0.32% exp. -- HYD

VanEck Short High-Yield Municipal Index ETF -- 0.32% exp. -- SHYD

SPDR Nuveen Bloomberg High Yield Municipal Bond ETF -- 0.35% exp. -- HYMB

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Table 7.4.3 - US state municipal fixed income ETFs

California

iShares California Muni Bond ETF -- 0.08% exp. -- CMF

Invesco Insured California Municipal Bond ETF -- 0.28% exp. -- PWZ

New York

iShares New York AMT-Free Muni Bond ETF -- 0.09% exp. -- NYF

Invesco New York AMT-Free Municipal Bond ETF -- 0.28% exp. -- PZT

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Chapter 8: The lowest cost target date & target outcome asset allocation ETFs trading on US exchanges

Section 8.1: Target date ETFs

Table 8.1.1 - Target date ETFs

NOTE ABOUT WHY NO TARGET DATE EFTs ARE LISTED:

* In 2014, iShares closed all of its target date ETFs, even though in aggregate they held more than $300 million in assets. iShares target date ETFs were the only relatively low-cost ETFs available in this segment. At that time and as an alternative, Deutsche Bank (Deutsche AWM) offered a Deutsche X-trackers family of target date ETFs in ten-year increments with somewhat over $100 million in total invested assets across all these funds. Unfortunately, the Deutsche X-trackers target date exchange-traded funds were twice as expensive at .65% annually than the closed iShares target date ETFs were. Then, in May of 2015, Deutsche AWM closed all of these Deutsche X-trackers target date ETFs, as well.

* In contrast, there are several lower cost target date mutual fund families that offering a much better value proposition. For example, Vanguard's target retirement mutual funds have very low expenses of .08%. Schwab also offers a low-cost target date fund family with very low fees averaging .08% annually. Fidelity offers a low-cost target date fund family with very low fees averaging .12% annually. However, you need to be careful to select only the Fidelity target date funds with "index" in their names. Fidelity has other, noticeably more expensive target date fund families that are not low cost.

Section 8.2: Target outcome ETFs

Table 8.2.1 - Target risk ETFs

iShares Core Aggressive Allocation ETF -- 0.15% exp. -- AOA

iShares Core Growth Allocation ETF -- 0.15% exp. -- AOR

iShares Core Moderate Allocation ETF -- 0.15% exp. -- AOM

iShares Core Conservative Allocation ETF -- 0.15% exp. -- AOK

* Read the prospectus before buying any security. Understand all benchmarks, restrictions, fees, trading costs and taxes.

Chapter 9: Buying ETFs

Section 9.1: Buying ETFs – Do it yourself

Low-cost ETFs are excellent vehicles to implement a long-term buy-and-hold diversified investment strategy. You need to understand how to trade properly, efficiently, and defensively, and you should purchase ETFs through discount brokers.

It only makes sense to purchase funds through the most inexpensive channel possible. Buying ETFs funds should entail very low brokerage fees. Pay minimal or zero account custody fees, which are often waived for balances above certain thresholds. Take care with bid-ask spreads.

Do It Yourself

"Full service" brokers and financial advisors do not have reliable methods for choosing investment funds that will "out-perform" their indexes, although there is certainly no shortage of brokers and other financial intermediaries who will claim, suggest, or imply that they can. Just save your money and buy inexpensive ETFs directly through discount brokers.

If you take the time to learn about trading properly, you will find that it is not that difficult. You do not need to let an advisor keep his hand in your wallet for years just to make some straightforward investment purchases.

If you chose to use a brokerage account for your investment portfolio, I suggest that you set up an account with one of the major discount brokers. Some of the major discount brokers are E*TRADE (owned by Morgan Stanley), Fidelity, and Schwab. Understand discount broker services and fees before selecting one of them.

While I am thoroughly unimpressed with E*TRADE's "trading is so easy" spokes-baby television advertising from several years ago, this does not disqualify E* TRADE as a viable discount broker for those who want to hold only fund investments and rarely trade. However, I do think that E* TRADE's advertising trivializes the complexity of cost-efficient securities trading, which they have done repeatedly in different forms over the years.

This "even babies could trade" promotion insults those who understand that proper securities trading is not trivial. Simultaneously, it misleads others to believe that they can and should trade securities more frequently without knowledge or sophistication and information that would supply a reason for trading. This trivialization is rubbish, and it is potentially very harmful to your financial welfare.

Although you are trading through a discount broker, even $0 trades are very costly from a dollar percentage standpoint (and time standpoint), if you trade frequently and in $1,000 trade sizes. If you are not getting best execution and eating most of the bid ask spread, free is really not free. If your trade sizes are much larger and they are very infrequent, then a real dollar trading cost is less important, since it is amortized over a much longer time period.

Section 9.2: Do your research – and do it BEFORE you buy

The lists in the book can be very helpful to an investor who wishes to focus in on low-cost ETFs. However, fund screening is the beginning of the investment process and not the end. Always understand any security that you are going to buy – before you buy it. Visit the investment fund company website. Do some research. Get the prospectus. Read the prospectus. Do some more research.

Yes, actually DO READ the prospectus, so you that really know what you are buying. You worked hard to accumulate your assets, so be careful when you decide where to invest them. Many individual investors skimp on doing their research and the great majority of people do not even open the prospectus.

To some degree, this is understandable, because most investment fund lawyers slather on copious quantities of cover-your-ass risk exposure disclosure language and other boilerplate language into these prospectuses. Nevertheless, a lot of useful information can be found in the investment fund prospectus along with all of this CYA verbiage. With some practice, you will learn where to focus your attention, when reading a prospectus.

Think of the situation this way. When you finally do figure out that low-cost ETFs are the better way to invest, you will also understand that these are funds that you can hold for many years without having to revisit your decision. So, take some time to read the prospectus so that you know what a particular fund is committed to do for you. If you do not like something, do not buy that ETF and move on to investigate another fund, until you find the set of investment funds that will meet your needs.

When you buy a house, you should always get a termite inspection report before your money is committed and locked in. Would you buy a house without a termite report? Are you willing to take the risk that you later might find that half the wood in the walls is already sawdust?

Think of a prospectus as the termite report for an investment fund. If more investors were to investigate seriously the funds that they buy and were to read the prospectuses, they might wake up to just how termite infested the fund industry is with excessive costs and other self-serving and risky behaviors.

Yes, in my research informed opinion, the wide variety excessive costs are the main termites that continually eat away at your net long-term investment returns. When you begin to view these excessive costs as termites, rather than as justifiable costs that will reliably enable you to beat the other guy, then maybe you will behave differently. Investment fund termites come dressed in all kinds of appealing garb, including historical performance charts and lots of stars accompanied by smiling and confident, but selective and biased advisor promotion. Ultimately, excessive investment fees and costs will rot your portfolio from the inside.

Section 9.3: The stability of low-cost ETF management expenses over time

Management expenses of low-cost ETFs and low cost no load mutual funds tend to be relatively stable over the long-term. Expenses are a much more reliable and durable investment selection method than historical performance.

For example, actively managed mutual funds with much higher expenses live and die on their historical performance record, which is what naïve investors pay attention to. Higher cost funds have more unstable investor populations, because their performance records tend to fluctuate around the return of the market. Following a largely random pattern, annual lists of fund winners and losers constantly churn. Last year's winners fall off the list and new winners are added. Over time there is always a list of winners, but the lists are never the same and rarely even very similar.

A minority of the more experienced investor population will eventually realize that investment fund performance chasing is just a higher cost shell game. As a result, low-cost index funds tend to be purchased by these more experienced investors. Many investors have figured out the hard way that spending more tends to get them less. After wasting years and wads of fees, they learn that their advisors really have no special insights, and finally they opt out of the game.

Only a limited number of ETF and mutual fund companies offer funds with very low expenses. Fund companies offering low-cost funds know that their clientele has chosen them for their commitment to track cost-effectively a diversified asset class market index.

Lower cost investment fund companies know that their highly cost-conscious clientele will abandon them, if they raise their fees. This factor leads to the long-term investment cost stability of these funds and obviates any need for cost conscious investors to change low-cost investment funds. In fact, as more index funds from low-cost vendors have been introduced over the past four decades, index investment expenses have declined to even lower levels.

Section 9.4: Economic ETF trade size considerations

This section discusses some considerations regarding efficient ETF trading and economic trade sizes. At the end of this section, you will also find two tables on ETF brokerage and trading cost amortization over 1-, 3-, 5-, 10-, and 20-year holding periods. There is one table on do-it-

yourself ETF discount brokerage cost amortization, and another table on full-service broker assisted ETF brokerage cost amortization.

Both ETFs and mutual funds incur portfolio management expenses and portfolio turnover trading costs within the fund. However, they differ with respect to the purchase and sale of shares in the funds. A mutual fund incurs the costs of buying and selling related to the funds of shareholders entering and exiting. After inflows are netted against outflows, mutual funds will have incremental trading expenses related to these net daily shareholder flows.

Therefore, all fund mutual fund shareholders must bear these trading costs, even if they are inactive buy-and-hold investors. This is another reason for passive investors to favor boring no load index investment mutual funds, because they have very low turnover in the portfolio. Furthermore, their fellow shareholders tend to me more stable and committed to a long-term buy-and-hold strategy and tend to own their shares much longer.

One of the advertised virtues of ETFs relative to mutual funds is that ETFs can shield the passive investor from the trading costs of active investors, since ETF shareholders bear their own trading costs. However, if you are really going to capitalize on this potential ETF advantage, then you need to ensure that your individual trading costs actually are really lower than they would have been if you were to have held low-cost passive mutual funds instead.

It is very important that you understand what your mutual fund versus ETF trading cost benchmarks should be. Since you can buy very low-cost no-load index mutual funds with very low turnover and since these funds are quite expert at managing their trading costs, then these funds are the relevant trading cost comparison benchmarks for your individual ETF trading activities.

When the cost of share trading shifts to you via ETF investing, you need to consider:

* economic order quantities,
* brokerage charges,
* the pricing quality of order execution, and
* the holding period.

Buying in a sufficiently large order size and using do-it-yourself trading via discount brokers can allow you to keep your trading costs sufficiently low. Holding your ETF investments for a

very long period will allow you to amortize the brokerage fees that you must pay and in effect lower your annual ETF trading costs

You should note that some of the lowest cost ETF vendors have already acknowledged that brokerage costs are a very significant issue, and they have already taken action. These very low-cost ETF vendors have made arrangements for commission-free ETF trading when you deal directly with them through their in-house brokerage accounts. Investigate whether you can take advantage of commission free trading with these vendors, because commission free trading is another strong reason to favor certain vendors who already offer ETFs that have the lowest portfolio management expenses.

The economics of ETF brokerage costs favor the accumulation of a reasonable amount of cash and work against frequent smaller investment transactions. Nevertheless, do not get too carried away with accumulating large blocks of cash for your ETF purchases. Investment risk premiums are the economic rationale for investing. If your cash is not deployed in stock or bond ETFs, then these market risk premiums are not available to you, when you are on the sidelines in cash for the parts of your portfolio you intend to deploy in stocks and bonds.

Properly analyzed, ETF brokerage costs involve the combined "round trip" brokerage cost of buying a position plus the cost of later selling that same position. In addition, trading costs should include the portion of the securities market bid-ask trading spread that you must pay, as well. In the tables below, I assume that your trade execution costs will be neutral, and that you will pay the full bid-ask spread for the combined roundtrip of ETF buying and eventually selling.

The full bid-ask spread means that you would pay one-half of the spread when you buy and the other half of the spread, when you sell. This is probably an optimistic assumption. "Best execution" prices are largely a myth for smaller retail investors. Do you really think that the securities industry is looking out for the price quality of your trades, when trading is a zero-sum game?

In the tables below, I have assumed that the size of the total bid-ask spread is .1% for a typical ETF and that you would pay half of the spread buying and the other half selling. For large and well-traded ETFs, this is a reasonable bid-ask spread to assume. In fact, the largest and most highly liquid ETFs have a bid-ask spread of only .02% to .05% in relatively stable market trading.

However, ETFs with a very narrow bid-ask trading spread constitute only a small minority of ETFs. You should be aware that ETFs without very large trading volumes can have very wide bid-ask spread percentages. These wider spreads can drive up your ETF trading costs dramatically. Furthermore, you should understand that bid-ask trading spreads can also increase significantly in volatile markets. In addition, do not even think about trading ETFs after hours, unless you are watching your trading costs very closely. Low after-hours trading volume can lead to very wide bid-ask spreads.

Table 9.1 -- Discount Broker ETF Trading Cost Amortization (% per year) *

Initial Purchase Amount	1 Year Holding Period	3 Year Holding Period	5 Year Holding Period	10 Year Holding Period	20 Year Holding Period
$500	4.10%	1.37%	0.0082	0.41%	0.21%
$1K	2.10%	0.70%	0.0042	0.21%	0.11%
$2K	1.10%	0.37%	0.0022	0.11%	0.06%
$5K	0.50%	0.17%	0.001	0.05%	0.03%
$10K	0.30%	0.10%	0.0006	0.03%	0.02%
$20K	0.20%	0.07%	0.0004	0.02%	0.01%
$50K	0.14%	0.05%	0.0003	0.01%	0.01%

* Percentages are total expenses divided by initial purchase amount divided by years held.

Assumptions for the discount broker ETF trading cost amortization table above:

* $10 do-it-yourself brokerage fee – buying
* $10 do-it-yourself brokerage fee – selling
* One-half of a .1% bid-ask spread – buying
* One-half of a .1% bid-ask spread – selling

Brokerage and trading costs are in addition to an ETF's annual portfolio management expense ratio, internal ETF portfolio turnover trading costs, and financial advisor fees. Assumptions about the impact of asset appreciation on the dollar value of backend spreads and the time value of money have not been considered in this analysis. If they were considered, then these brokerage cost percentages would likely be slightly higher.

Table 9.2 -- Full-Service Broker ETF Trading Cost Amortization (% per year) *

Initial Purchase Amount	1 Year Holding Period	3 Year Holding Period	5 Year Holding Period	10 Year Holding Period	20 Year Holding Period
$500	20.10%	6.70%	0.0402	2.01%	1.01%
$1K	10.10%	3.37%	0.0202	1.01%	0.51%
$2K	5.10%	1.70%	0.0102	0.51%	0.26%
$5K	2.10%	0.70%	0.0042	0.21%	0.11%
$10K	1.10%	0.37%	0.0022	0.11%	0.06%
$20K	0.60%	0.20%	0.0012	0.06%	0.03%
$50K	0.30%	0.10%	0.0006	0.03%	0.02%

* Percentages are total expenses divided by initial purchase amount divided by years held.

Assumptions for the full-service broker ETF trading cost amortization table above:

* $50 full-service broker assistance fee -- buying
* $50 full-service broker assistance fee – selling
* One-half of a .1% bid-ask spread – buying
* One-half of a .1% bid-ask spread – selling

Brokerage and trading costs are in addition to an ETF's annual portfolio management expense ratio, internal ETF portfolio turnover trading costs, and financial advisor fees. Assumptions about the impact of asset appreciation on the dollar value of backend spreads and the time value of money have not been considered in this analysis. If they were considered, then these brokerage cost percentages would likely be slightly higher.

Section 9.5: ETFs are for traders with open eyes

Some of my time, I work directly with paying clients to develop comprehensive lifetime financial plans and investment plans. I always explain the virtues of a globally diversified, fully passive, very low cost, index fund investment strategy to every client. I always suggest a very low cost, broadly diversified, passive, low tax, low effort, and long-term buy-and-hold-and-hold investment strategy.

(Of course, this completely passive investment strategy needs to be tuned to individual risk preferences, to appropriate asset allocation strategies, and to a person's current and projected financial resources. Custom analysis is also required for "captive" assets in 401k, 403b, 457, SEP, Simple and other

employer-sponsored retirement plans where a person must choose from a limited list of fund choices, which may not always be the most desirable.)

I always provide to clients lists of screened low cost, no load mutual funds from which they can select low-cost mutual funds for their particular needs. However, as a general policy, I have decided not to provide similar lists of low-cost ETFs to a client, unless that client has trading experience and understands efficient, low risk trading. For clients with limited trading experience, I prefer low-cost, no-load index mutual funds for their relative purchasing simplicity in comparison with ETFs.

However, if more experienced clients wish to use low-cost ETFs to implement a very low cost, broadly diversified, passive, low tax, low effort, and long-term buy-and-hold-and-hold investment strategy, then appropriate low-cost ETFs can do the job for them nicely, as well. As with any other investment product, anyone considering ETFs should determine whether they are appropriate to their background, knowledge, and experience. Generally, buying and selling ETFs/ETPs entails unnecessary complexities and pitfalls that passive, low-cost no-load index mutual funds tend to avoid.

The May 6, 2010 US stock market “flash crash,” however brief, demonstrated that naïve traders inadvertently can do real damage to themselves when not trading knowledgeably. Naïve individual retail traders were among those hurt the worst in this extremely brief, but severe, stock market fiasco, which was followed by an almost immediate and almost full recovery in the same day – if not the same one-hour period. Naive traders were trading ETFs or stocks with market orders or with a stop order without a limit that converted automatically into a market order once collapsing trading prices passed rapidly through the stop order price they had set.

(Note that while infrequent relatively brief, the May 6, 2010 flash crash was not entirely unique. On August 24, 2015 markets experienced another “flash crash” event, and on October 15, 2016 markets experienced a treasury “flash rally” event. The following is an incomplete list of major and minor flash crashes to indicate they happen too often to ignore blithely:

* May 6, 2010 -- Dow flash crash (down 1,000 points in 10 minutes due to "spoofing" by one person at home in London)
* August 22, 2013 -- NASDAQ server went down for three+ hours with $500 million in losses during Facebook IPO

* October 15, 2014, Bond Flash Crash (in minutes 10-year Treasury note dropped and rebounded)
* January 15, 2015 -- Swiss Franc flash crash
* July 8, 2015 -- NYSE floor did not trade for three and 1/2 hours -- cause unknown
* September 2015 -- FTSE 100 flash crash caused by a 'fat-finger' mistake with limited liquidity
* October 6, 2016 -- British Pound flash crash
* January 2, 2019 --Japanese Yen flash crash
* May 2, 2022 - A sudden drop in European shares on Monday following an error in Nordic trading caused European shares to drop suddenly.
* January 25, 2023 - NYSE opens with huge price swings because a backup system that should have been off

Without the details, which you can research online, these flash crash events sometimes lead to crazy bid-ask spreads and misalignments between ETF values and underlying component asset values. Knowing how to trade safely is a key knowledge take-away to protect yourself. In addition, it also points out that on an ongoing basis even very passive buy and hold ETF investors must be conscious of wide bid-ask spreads whenever they trade. The ongoing management expense ratio is a continuous drain on returns, but a wide and unfavorable bid-ask spread can erode returns when getting in and out of an ETF position – even when no unusual market event is occurring.)

Note that a stop order has a price but does not limit the price if the market price fell below the stop price. In volatile, falling markets, a stop-limit trading order is more protective, because it combines a stop order and a limit order and prevents a stop order from being executed at a market price below the stop price.

See these US Securities Exchange Commission (SEC) pages:

* SEC: "Trading Basics - Understanding the Different Ways to Buy and Sell Stock"

http://www.sec.gov/investor/alerts/trading101basics.pdf

* SEC: "Stop-Limit Order"

http://www.sec.gov/answers/stoplim.htm

* SEC: "Stop Order"

http://www.sec.gov/answers/stopord.htm

* SEC: "Limit Orders"

http://www.sec.gov/answers/limit.htm

* SEC: "Trade Execution - What Every Investor Should Know"

http://www.sec.gov/investor/pubs/tradexec.htm

On May 6, 2010, in less than half an hour, market prices crashed dramatically and substantially for some stocks and ETFs. Prices collapsed so rapidly that many market orders were executed at prices far lower than expected. Some stop orders could not and did not get filled anywhere near the expected stop price point. The volume of selling orders skyrocketed in the panic and many buyers stepped away from the market until things settled down. Briefly, some supposed market makers were nowhere to be found.

High frequency traders exited, demonstrating that their much-vaunted contribution to increased market liquidity is mostly take and not much give. In short, there were too many hot potatoes and too few buyers willing to wear oven mitts during this unfortunate market interlude. After the dust settled, exchanges took the almost unheard-of step of canceling some ridiculously low-priced trades, but many very low-priced trades were sustained and were not cancelled. In a flash, some naïve traders found themselves to be a little or a lot poorer.

Imagine if you had owned a particular $100,000 ETF position in the morning and that this ETF was a noticeably large part of your retirement portfolio. Imagine that you had placed a market order to sell during the flash crash without having current ticker information or that you had a standing stop loss order without a limit that would convert to a market order. In minutes, your sell order or unlimited stop loss order could have been executed at a market price of $50,000. You would have lost $50,000 and would have experienced the double financial insult of seeing the market price of that ETF recover by the end of the day to perhaps $98,000.

Moreover, this tragic order would not have been cancelled. While canceling executed orders is almost unheard of, in this flash crash, exchanges cancel some bizarrely low-priced trades. However, the exchange decided arbitrarily only to cancel trades that cleared greater than 60%

away from their pre-crash prices. Does this unusual, but very real situation give you a lot of confidence in your ability to trade safely?

By the way, regulators and exchanges have been studying this flash crash and have been taking some possibly corrective steps. Nevertheless, what was perhaps most striking about this clash was the general lack of public clarity as to its causes and how slowly the answers came about what had happened. While reports have been issued, vagueness and the continuing uncertainty over the efficacy of the limited corrective measures that have been taken or have been proposed do not inspire great confidence in the securities markets.

US securities markets continue to look like a snake pit – at least concerning whether naïve individual investors can participate with limited knowledge and not get bitten on occasion. Correlated with this crash, direct "retail" investor participation in stock market trading dropped off noticeably and has been slow to recover. In addition, following the flash crash, investor confidence has been further undermined by the Facebook IPO fiasco, the trading failures at Knight Capital, BATS Global Markets calling off its own IPO due to aberrant trades, and other market problems.

I doubt if you will ever see a TV ad with that insulting and vomiting E*TRADE baby from some years back attempting to explain the dangers of an ETF market order or stop loss order without a limit during a market free-fall. Trading is not really so simple that a baby (or an adult without knowledge and experience) can do it – at least not without some occasional and possibly major diaper soiling along the way.

Because ETFs add complexity to the situation, they are inappropriate for some do-it-yourself investors. If investors do not understand ETF nuances and trading concerns and do not wish to learn to trade properly and defensively, then the more straightforward alternative is to use only passive low-cost no-load index mutual funds. Stay away if you do not know what you are doing with ETF trading.

Do you really think that the securities industry has made all this under-ten-dollars-a-ticket retail trading by individuals so easy for your benefit and your best interests? When retail traders interact with professionals, who do you think wins most often? Who is likely to be the easiest mark around the trading table?

If you intend to buy-and-hold-and-hold and in effect, never to trade, then you probably do no need to learn about ETFs anyway. Instead, you could just buy passively managed, low-cost no-load index mutual funds, and let the index mutual fund's professional traders do the bare minimum of trading for the portfolio and for you.

Section 9.6: Do not purchase ETFs through high-cost financial advisors

Related to your ETF investments, you do not need to pay high "full-service" broker commissions, broker asset wrap fees, or financial adviser percent-of-assets fees

The good news is that very low cost, broadly diversified passive index ETFs are very easy to find using this book. You simply do not need to pay a broker, financial, or investment advisor to tell you which ETFs to buy or pay them a high fee to carry out the transaction for you. Your "hourly wage" for taking the personal initiative to do it yourself is very high versus what you will pay to financial advisors.

Purchasing ETFs through a financial advisor or through a "full-service broker" can be very expensive over your lifetime. Your costs tend to be much higher and your investment risk exposure tends to increase with advisor recommended ETFs.

Realize that brokers and financial advisors may not place you in the lowest cost funds, in part, because higher cost funds provide advisors and their firms with higher direct and indirect compensation. Second, and all too often, many commissioned and fee-based advisors

recommend more expensive, actively-managed funds in an effort to justify the high fees they charge. Why pay an advisor extra, if he is not going to beat the market for you and "earn his keep?" Such an advisor will take added and unnecessary investment risk using with your money.

When you pay sales commissions or percent of assets fees, and they advisor recommends expensive funds, you shoot yourself in both feet. First, you pay for inferior advice. Second, you end up living with higher fund expenses that kill a substantial part of your investment returns. Higher brokerage fees, marketing fees, and asset fees can be avoided by buying ETFs through a discount broker or through the low-cost brokerage operations of some low-cost fund companies that will sell directly to the public.

Almost uniformly, brokers now call themselves "financial advisors." However, brokers have used loopholes to skirt and largely escape any legal obligation to act as a fiduciary and work in your best interests. All brokers are required to do is to sell you "suitable" products and disclose the terms of those products including whatever the associated expenses may be.

In fact, over many years the US brokerage industry, with the complicity of weak US regulators, muddied the differences between securities brokers and investment advisers by glossing over their differing legal obligations regarding the interests of investors. Recent survey research demonstrates that the investing public has little clue that there is supposed to be any legal difference in the standards of professional care between brokers and real financial advisers. Most investors do not understand that brokers simply have no obligation to serve the best interests of their clients.

Just as unfortunate, however, is the very wide range of investment product expenses that characterize investment funds selected and promoted by real financial advisers. Financial advisers regulated under the Investors Advisers Act of 1940 are supposed to act in the "fiduciary" or best interests of their clients. Yet, there has been little restriction on the fees that they assess or the cost of the products that they recommend. Far too many financial advisers place their clients in expensive investment funds, when the historical record indicates that inferior outcomes are to be expected. Both brokers and investment advisers who recommend expensive investment funds seem far more similar than dissimilar. Are the best interests of the client being served by either group? You decide.

Section 9.7: The failure of financial advisers to add value in fund selection

Despite their confident assertions, financial advisors and brokers historically have not demonstrated competence in choosing "better" investment funds for their clients. Instead, brokers and brokerage firms had demonstrated an uncanny ability to siphon away very substantial portions of the wealth and investment returns of retail investors – primarily by promoting needlessly expensive and risky investments.

Investment research contradicts financial industry claims that it helps individual investors to do better

You might like to read a very enlightening study focused on the quality of professional brokers advice about mutual fund selection. After reading this study, you might change your ideas about the value of financial advisors, alter your buying habits, and save yourself substantial sums of money for the rest of your life.

In this Harvard Business School finance working paper, "Assessing the costs and benefits of brokers in the mutual fund industry," Professors Bergstresser, Chalmers, and Tufano analyze the value-added of the broker sales channel for mutual funds. (Again, remember that while brokers call themselves "financial advisors," they have no legal obligation to give you advice in your best interest. Brokers have huge leeway in the "suitable" investments that they push.)

In the conclusion of this research study, Professors Bergstresser, Chalmers, and Tufano state that:

> "We begin with a positive hypothesis: the prominence of funds sold through brokers implies that brokers provide consumers with valued services. Our study has identified few, if any, of these benefits." *
>
> * Bergstresser, Daniel B., Chalmers, John M.R. and Tufano, Peter, "Assessing the Costs and Benefits of Brokers in the Mutual Fund Industry" (January 16, 2006). AFA 2006 Boston Meetings

This is a rather stark conclusion, when you consider that the great majority of mutual funds are sold through brokers and other third-party financial advisors.

In buying mutual funds through brokers and advisors rather than purchasing them directly from fund companies, individuals incur very substantial front-end or back-end sales load charges, and they pay substantially higher ongoing fund management and marketing expenses. Individual investors unnecessarily waste tens of billions of dollars every year by purchasing mutual funds through brokers and advisors rather than buying directly.

Higher cost brokers and financial advisors have no special insights about the future

Regarding the future, high-cost brokers and financial advisors do not know anything special compared to any other reasonably informed investor. However, they do seem to be quite good at suggesting that they do have superior insights.

Professors Bergstresser, Chalmers, and Tufano used a database that allowed them to compare the performance and other characteristics of broker sold mutual funds versus directly purchased mutual funds. Here are some additional quotations from this research study.

> "Do brokers offer and sell higher performing funds? ... summing up across broad equity, bond, and foreign equity investment categories leads us to estimate the annual underperformance of the broker-sold funds at $4.6 billion dollars in 2004. This underperformance is before the payment of $9.8 billion in 12b-1 fees paid in 2004 and the payment of other distribution fees such as loads." ... (pages 7 to 9)
>
> "Do brokers provide better asset allocation and timing abilities? ... We find no evidence that, in aggregate, brokers provide superior asset allocation advice that helps their investors time the market." ... (pages 10 to 12)
>
> "Putting a brake on behavioral biases? ... Another behavioral bias is the tendency to chase past returns, measured by the flows into and out of mutual funds as a function of prior fund performance. ... While in theory, brokers could reduce the behavioral bias to chase returns, we find no consistent evidence in practice that return chasing is substantially weaker among broker-sold funds." ... (pages 15 to 16)
>
> "Do brokers merely sell what they are paid to sell? ... Relative to the direct channel, brokers' clients select asset allocations that perform no better, and invest in funds that perform worse even before any distribution fees are considered. For these

non-benefits, they pay front-end loads that are as much as 417 basis points (4.17%) higher and annual distribution charges that are up to 40 basis points (.4% per year) larger." ... (page 17)

"An optimistic interpretation would be that brokers are indeed acting in their clients' interests, but, as researchers, we have simply not been able to measure the many substantial intangible benefits that brokered clients receive. ... A less charitable interpretation of our results is that financial intermediaries may not always act in their clients' interest, but rather put clients' interests behind their own interests and the interests of the fund companies that pay them." ... (page 17)

"In summary, we find a reasonably clear pattern of results. We find that the brokered channel sells funds with inferior pre-distribution-fee returns. The channel does not show any evidence of superior aggregate market timing ability, and shows the same return-chasing behavior as observed among direct channel funds. Finally, more sales are directed to funds whose distribution fees are richer. This work leaves us with the puzzle of why investors continue to purchase funds that appear to be no better at substantially higher costs. The answer could be that we, as researchers, failed to measure important intangible benefits, or that consumers of brokers fail to consider the costs and benefits of this relationship." (page 18)

If you purchase mutual funds or ETFs through brokers and other financial advisors, you might want to reconsider your investment purchasing practices. To understand more about the lack of value provided by brokers and advisors in selecting mutual funds for investors, I suggest that you download and read this important and rather disheartening research paper.

Reading this study requires your reasonably careful attention, but it is not difficult to read in less than an hour. If you still need convincing that you should purchase mutual funds directly and cut out the middleman, this could be a very profitable hour of reading for you.

I maintain a permanent link to "Assessing the Costs and Benefits of Brokers in the Mutual Fund Industry" by Bergstresser, Chalmers, and Tufano, on one of my websites. Go to:

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=616981

This link will take you to the Social Science Research Network website where you can download a free copy of this study in Adobe Acrobat .pdf format. When you get to the SSRN site, just click on the "One-Click Download" link, save the file to your local disk, open, and read.

Section 9.8: Free financial services advice and the cost of financial advisors

If you need financial advice, pay for it directly. “Free financial advice” is often the most expensive advice you can get.

Most proactive and knowledge seeking individuals can manage their own personal finances. They simply do not need a continuous relationship with a financial advisor charging high fees. For occasional assistance, pick an advisor who can deliver competent, objective advice, but who does not sell financial products.

If you agree with the advice given to you, buy the recommended financial products directly via the most inexpensive channel possible. When financial advice and financial product sales activities are combined, it is highly dubious that you will get the best advice in your best interests. It is much more likely that the advisor will feed his or her family first with your money.

See this collection of my articles on advisor selection, payment, regulation, frauds, and scams:

https://www.theskilledinvestor.com/financial/financial-advisors-investment-counselors.html

The only reliable way to ensure financial advisor objectivity is to pay directly for their services

Pick financial advisers and investment advisers solely to obtain objective and high-quality financial advice. Specific financial counsel and investment counsel is potentially of high quality, only if it is carefully customized to your particular needs and only if it is given by an adviser who is absolutely independent, knowledgeable, and competent. The only reliable way to ensure the potential objectivity of any financial planning advisor or investment counselor is to pay directly for the adviser's services, after investigating the adviser's background, competence, and work ethic.

There are no shortcuts. "Free" advice is never free. In fact, free advice is usually far more expensive than the advice that you receive from an advisor whom you pay directly. When you choose to obtain "free" advice, in lieu of paying fixed hourly services or a fixed fee for a planning project, the long-term costs to you can be horrendously high. These huge costs are largely hidden and that is why this industry game of "free" financial advice keeps going on.

Free "advice" from industry-paid advisors leads to inferior investments

Advice that is contingent on any expectation that you will purchase products through your financial counselor is subject to major conflicts of interest. Financial advisers, who are not paid directly by you, must instead derive their compensation from commissions and other fees paid by the financial services industry. "Free" recommendations lead you to buy financial products that were not the best for your needs and that are not the best products available.

Many people pay investment front end sales loads for advice that seems free. Industry representatives willingly tell you that their advice is both free and good. You just end up paying a financial sales rep to sell to you and in the process perhaps to confuse or mislead you about the facts. The industry argument is that the advice is free and that you only have to pay, if you do follow the good advice that is given so freely.

Sales charges and good financial advice are a contradiction in terms. For example, industry-paid financial advisors get paid relatively little to suggest low-cost index ETFs and low-cost index mutual funds, but those are the funds with the best future prospects. Much better advice can be found, when you look of it. If you buy and hold very low cost, low turnover, and broadly diversified passive index funds, you are more likely to get better net long term total returns after taxes, fees, and other costs are taken into consideration.

For example, when you pay a front-end sales load with a mutual fund, your initial invested assets are lowered by the amount of the front-end sales charge. In addition, only actively managed funds will be recommended and actively managed funds tend to carry more expensive management expenses and higher hidden investment portfolio trading costs. Furthermore, an additional 12b-1 sales fee will get tacked on every year. With a 12b-1 fee, the same investment counselor who gave you the initial "free" advice will get paid over time to stick around and sell you more of the same.

Financial sales loads, excessive asset fees, high-cost active investment strategies, and a myriad of other suboptimal financial industry strategies and products typically bleed 1/4 to 1/3 of the typical individual investor's portfolio annually before taxes. This waste compounds year after year after year, until individuals and their families get smart and realize that "free" is not really free and that "just of percent or two" will have a huge cumulative negative impact on their financial welfare.

Financial advisor conflicts-of-interest are very dangerous to your personal finances

Many industry-paid advisers are ethical and helpful. However, the reputations of ethical advisers are tainted by others who are just salespeople who masquerade as advisers. Furthermore, even industry paid advisors face a career-long struggle to be independent of financial industry influences. They must spend their careers balancing the best interests of their clients against the interests of the financial companies that employ them. They must weight continuously the best interests of their clients against their own personal financial interests, paychecks, and bonuses.

When they are paid by the financial services industry and not by their clients, think about the continuing dilemma that even an ethical person faces. Training programs for industry

compensated financial advisors and investment advisors focus on selling, selling, and more selling. These people are classified as "producers" by the industry, because that is what they do. They produce revenue and profits for their companies. These revenues and profits come from you.

When an advisor is not independent, you never know whether you are getting good advice or the latest sales pitch

When a financial advisor is not independent of the financial services industry, you can never be certain whether you are getting the best advice or just falling for the latest financial sales pitch. Once an ethical and newly minted financial counselor emerges from a financial industry training program and starts a financial sales career, the pressure to produce is constant. His compensation program will provide incentives to take more and more from his clients and will pressure him to pull in more and more assets to manage. His company will constantly pressure him to perform and produce more revenue.

Now, think about the not-so-ethical financial advisor who is paid by the industry and thinks first about his or her paycheck and bonus, before taking care of your personal financial interests. You do not stand a chance.

US financial services industry regulation is minimal at best. When a loose regulatory environment is combined with not-so-ethical financial advisors and investment counselors, almost anything goes. Most financial consumers are confused and outgunned. If industry sales reps can push expensive, high compensation products into the "retail" financial consumer channel, they will. There is little to stop them from emptying the wallets of naive retail financial consumers and individual investors.

You have to seek out and find proactively financial advisors who are truly independent. If you become more knowledgeable about how the personal finance advisory industry works, you can better assess the quality of the financial and investment advice that you receive. Eventually, you will realize that the only financial advisor you want is one whom you pay directly and who receives no compensation from the industry in any form.

Chapter 10: Other considerations

Section 10.1: The performance conundrum: superior past performance does not predict superior future performance.

The bad news for performance chasing investors is that the research literature shows that superior or even average historical fund performance tells you ABSOLUTELY NOTHING about how a fund will perform in the future. This can be one of the hardest things for investors to understand. Their gut instincts tell them to pay attention to performance, but the research has shown that better past performance is irrelevant, when choosing which particular securities to buy.

When you buy an index fund, you should get close to the return for that index - less whatever fees you choose to pay. Superior historical performance is just a mirage that makes too many naive investors buy certain funds, but only after their superior performance is likely to have waned. Because the financial industry and the financial press keep pushing historical performance information in front of you, you need consciously to ignore it and instead focus on only buying funds with lower costs.

Of course, performance is anything but irrelevant to investment decision-making. However, the important questions are:

* What performance data should be used? and
* How should performance data be used?

Your combined investment objectives, personal risk tolerance, and financial capacity to bear risk should drive the asset allocation decision for your overall portfolio. Your asset allocation decision sets the various proportions of asset classes you hold in your portfolio. The primary financial asset classes are cash, bonds, and stock plus real estate and other property assets. These asset classes have known histories of returns and volatility or risk, and these characteristics influence how these asset classes are mixed and matched in your investment portfolio.

By choosing to hold different proportions of various asset classes, you attempt to achieve your future investment objectives, achieve investment returns, and control risk across a future that is completely uncertain for everyone. The combination of these various asset classes tends to lower the aggregate risk of your portfolio, since asset class prices tend not to move in unison. The aggregate behavior of your portfolio is what counts. Welcome to portfolio management 101.

Your asset allocation and asset selection decisions are what really drives your future investment returns. Future investment performance is dominated by the risk premiums that securities markets tend to pay to those who continue to be invested in the various asset classes and are exposed to market risk. Your returns are dominated by your willingness to be invested in the securities markets and exposed to risk – and not by clever securities selection designed to beat the other guy.

Within asset classes, investment selection is largely a random process. Nobody can reliably see into the future, and over the long run people tend to get the return of the market less the costs that are associated with the securities that they have held. Past winners tend to become average or sub par in the future. Past winners provide no reliable evidence about which securities to choose within any asset class.

When choosing among individual securities, however, cost minimization is the ONLY reliable method to target the market returns of your various assets classes in whatever proportions you hold them. When investors look first at the past performance of individual securities, unfortunately they tend to buy unnecessarily high-cost securities. Magnitude of random variation in short-term securities performance will almost always exceed the investment costs of those securities. There will always be winners, but the roster of winners keeps churning and there not reliable method to sort winners from losers beforehand.

Buying securities without regard to their costs is highly detrimental to your long-term wealth accumulation. With time, performance tends to even out in what is known as "reversion to the mean." Then, cumulative costs become the dominant factor inhibiting your returns. The cumulative long-term drag of excessive investment costs is far greater than most investors realize. Over the decades even average costs paid to the industry can bleed away one-third of a family's wealth.

Passive, low cost, index investment funds usually have higher net risk adjusted performance

If you evaluate the investment research literature, you will find that portfolios that hold passive, low cost, funds are far more likely to lead to higher risk adjusted net investment performance over the long run. You can help to break the cycle of frequent fund buying and

selling. You can get off the performance chasing hamster wheel that the securities industry wants you to keep running on for your entire life.

Securities sales people and financial advisors get paid more, when you pay more. That is why they shamelessly tell you that you must "pay more to get better performance." This is complete rubbish. The investment research literature says the opposite. When you pay less, you tend to get more.

Push the button — get some incentive cheese. Tell naive investors to pay more — get some more cheese in the form of big bonuses. That is why financial sales people keep hitting their incentive buttons over and over with their clients. Their incentives are to sell you expensive financial products, because that is where their bonuses and their employer's profits come from – not from low-cost investments.

When financial salesmen push their buttons and sell expensive funds to you, you end up being the one who pays them out of your own investment returns. But over time, there is no objective researcher to watch over the process, take notes and rigorously compare performance.

Very few individual investors take a close look at their risk-adjusted results and compare them to the net results they would have gotten from the passive, low-cost investment strategy that was always available to them. Had their financial advisor been willing to over-come these inherent conflicts of interest and suggest a low cost, passive strategy, the investor would more likely have done better.

Most financial advisors are just salespeople, and they are trained to disparage low-cost investing. Just ask about buying low-cost investment funds, and you will find that the most common tactic is for the advisor to laugh at the idea. This client humiliation tactic deftly avoids a rational discussion. Since the logic and evidence is consistently on the side of low-cost strategies, why even engage in a rational discussion with a client? Most clients are uncertain about the complexity of investing and many unjustifiably view financial advisors as masters of the investment universe. Too many clients will just shut up and go along with these advisors.

Most clients do not realize that many financial advisors just parrot the sales talking points they are trained to deliver and that these advisors never bother to track and understand investment research. If financial salespeople really understand the investment research literature,

— and most do not — they just hope that you will never figure it out. Or, they hope that you will not realize the problem until years later, after they have been paid their bonuses and your personal investment portfolio is smaller than it could have been.

However, if you have already figured out the problem, then the ETF selection methods explained in this book offer you a better solution and give you a relatively straight-forward way to pick better investment funds. Become an extremely cost-conscious consumer of financial and investment products today, and you will start to control the only lever you really have available to improve your future net investment performance.

Section 10.2: Passive index funds have delivered better long-term returns net of costs and taxes

If a US investor is going to hold an ETF or mutual fund, it is most likely that that fund is benchmarked against the Standard and Poors 500 Index. If you are paying more for your S&P 500 indexed funds compared to the ETFs listed in this book, you probably are hoping that you are getting a better return by paying higher fees. You are much more likely than not, however, receiving lower rather than higher net returns. The negative effect on your portfolio is cumulative, since you keep paying these excessive fees year after year.

The good news is that the vast majority of ETFs are passively managed index funds, so when you buy S&P 500 index ETFs, you have already made a big step by opting out of the active management game. However, as discussed above, fees are still important, when there is no good reason to pay more for market performance. Even among passive indexed ETFs there is a range of fees that are charged for essentially the same products.

Standard and Poors keeps track of the performance of actively managed investment funds that use the S&P 500 index as a performance benchmark (SPIVA reports). You should note that SPIVA reports focus on the history of actively managed mutual fund performance relative to a passively managed S&P 500 index portfolio. Nevertheless, the data is instructive for those who chose ETFs designed to track the S&P 500 index.

These SPIVA reports are available online for anyone to read at:

https://www.spglobal.com/spdji/en/research-insights/spiva/

Generally, the Standard and Poors SPIVA active versus passive mutual fund scorecards show that the longer the time horizon, the greater the advantage of the lower cost passive funds and the more the mirage of higher cost active management disappears.

These effects are even more pronounced, when you look at the SPIVA data on the lack of superior performance persistence regarding individual active funds – versus just comparing active and passive fund group averages. Furthermore, the inferiority of active strategies is not just a US phenomenon. Uniformly across various countries that have SPIVA reports available for other S&P indices, when the time horizon increases higher cost active strategies are increasingly inferior to lower cost passive strategies.

Mutual funds with higher fees are simply gouging their customers much more, without a reasonable expectation of better results. These higher fees just make these funds less likely to deliver the value-added that they imply they should provide.

High-cost investment fund vendors hide behind short-term market volatility and random performance outcomes. Many active ETF and mutual fund investors move from one former winner to another former winner – often egged on by their brokers and financial advisors. Naïve investors chase past performance; advisors selectively sell past winners; and portfolios are churned in an endless, losing shell game.

Unfortunately, superior historical performance is simply not a predictor of superior future performance. In contrast, lower fees and costs are the best predictors of superior future net performance available to you. Standard and Poors SPIVA reports support the virtues of lower investment costs. The increasing shift of investor assets into low-cost ETFs and into low-cost no-load index mutual funds and away from higher cost funds indicates that at least a large minority of investors has caught on to this sham.

Section 10.3: How many ETFs should a portfolio hold?

There is no precise answer to the question of how many different investment funds a person might hold. I suggest that you avoid a proliferation of accounts and investment funds. Perhaps you could set a maximum limit of two or three different discount brokers combined where you would have accounts.

Of course, you could have multiple accounts with each vendor. Multiple accounts with a vendor are prompted usually by the need to segregate taxable assets, traditional tax-advantaged retirement accounts, and Roth accounts. Furthermore, sometimes there are reasons to maintain multiple tax-advantaged accounts of the same type to maintain a separation between different sources of tax-advantaged assets.

> For example, if you have done a series of traditional retirement account to Roth asset conversions over the years, there are reasons to keep each conversion in a separate Roth account for tracking purposes, since two different five-year rule tests govern taxability of withdrawals. In another example, if you rolled over a 401k into a rollover IRA, you may want to avoid commingling new IRA contributions within that same account. This would allow you later to roll those IRA (401k) assets into a subsequent 401k, if you wanted to execute a back door Roth IRA conversion.

Overall, ten or fewer different ETFs could be held across all these accounts, but the total number could be higher or lower, depending upon your assets and whether you have a proliferation of tax-advantaged retirement accounts. You could, of course, hold shares of a particular ETF in different accounts, if you need to keep certain tax-advantaged assets segregated or have ownership in accounts with different registration titles.

By the way, the greater the proliferation of accounts, the more periodic reports you will receive. However, each vendor should provide a consolidated report on your family accounts either monthly or quarterly. Frequency may depend upon account activity. To save money, these vendors will try to get you to accept email delivery of electronic reports in lieu of hard copy statements. Personally, I prefer to receive the printed reports despite the additional physical filing. For me, printed reports are just more "accessible." Whether printed or electronic, you need to keep these financial records secure, given the increasing and cumulative menace of identity theft.

See this extensive article: "Identity theft protection and prevention" at:

https://www.theskilledinvestor.com/wp/identity-theft-protection-638.htm

Section 10.4: Should a person invest in dividend stock ETFs?

Dividend-oriented mutual funds have been in existence for many years. In recent years, an increasing number of dividend ETFs have been introduced by fund companies. In this book, you will find listings of low cost international and US dividend stock ETFs. These low-cost dividend stock ETF lists are provided, because some investors have chosen to emphasize dividend paying stocks in the equities portion of their investment portfolios.

The purpose of this section, however, is to question whether an investment strategy emphasizing dividends is necessarily a preferable investment strategy. The alternative is to invest in the broadest possible diversified stock portfolio or the entire universe of stock ETFs whether or not they pay a dividend.

While there may be no "right answer" to this question, to invest in low-cost ETFs that skew toward companies that pay dividends, you will necessarily have to pay a modestly higher expense ratio. Doing this will also skew the stock exposure within your portfolio toward larger, more mature, and perhaps slower growing companies. Furthermore, a dividend strategy can tend to skew a stock portfolio with respect to industry segments. For example, a focus on dividend stocks might perhaps increase exposure toward consumer products, industrial, utilities, and financial services firms.

Investor preferences for stock dividends and many dividend investment funds serving these investors have been around for many years. However, the low return environment in the wake of the credit crisis and Great Recession has greatly amplified investor demand for dividend paying stock funds. In more normal markets, the price earnings ratios of dividend paying stocks usually have been significantly lower than those of firms that pay no dividends or that pay relatively small dividends.

As the Federal Reserve has restrained interest rates and the number of low return years has ground onward, investors have reached increasingly for higher returns. They have sought higher returns in riskier bonds, in supposed "alternative" assets, and in dividend paying equities. By 2012, as measured by the price earnings ratio, dividend paying stocks had been bid up in price to the point that the P/E ratio of dividend stocks was on parity with that of non-dividend paying stocks.

If the business environment continues to normalize, as it has been doing slowly in the wake of the financial crisis, will dividend stock and non-dividend stock P/E ratios revert back toward

their historical relationships? Time will tell, but if this were to happen, then dividend stocks would experience relatively lower price appreciation than would non-dividend paying stocks.

Personally, a focus on dividend paying firms has always seemed a bit odd to me. Over the long-term, securities markets price the relative value of companies and their common stocks in relation to the expected growth of future earnings. Whether and how those earnings are disbursed is a matter of far less concern in the valuation of equity securities.

Obviously, firms may need to use some cash from earnings to fund operations, but they have alternatives regarding what to do with any excess earnings. The primary alternatives that corporations have with excess cash not needed for operations or acquisitions are:

A) to retain excess cash, which will be reflected in higher per share stock prices because retained cash increases balance sheet assets,
B) to buy back shares with cash, which supports a higher per share stock price by reducing the number of shares outstanding, and/or
C) to declare dividends and distribute cash to shareholders reducing the assets of the corporation.

By issuing dividends, the distributed cash tends to reduce share price growth, but these dividends still do enhance the pre-tax total yield to shareholders. Dividends can be used for consumption, or dividends can be reinvested by purchasing additional shares or by buying a different security.

If two firms are exactly the same in all respects and are exactly the same in their expected future earnings, then how they deal with excess cash earnings should not make a substantial difference in their market valuation. For example, if one firm pays no dividends and retains all earnings, the market will set its stock price based on the combined value of its expected future earnings and the value of its retained assets. For example, the net result might be that the markets value the firm's asset growth component at 3% and its future earnings growth component at 4% for a total stock price appreciation of 7% per year.

The second firm distributes all excess cash earnings as dividends, so the market would still value future company earnings growth at 4%. However, from the investor's point-of-view, he has also received a pre-tax distribution of 3% for a total pre-tax return of 7%. If the investor is a non-

taxable institution, their net return is also 7%. If they are an individual investor subject to taxation, their return is 7% less any personal investment tax obligations related to the dividends.

Alternatively, the second firm could use the excess cash earnings to buy back shares. Therefore, similar to the dividend distribution situation, the markets would give no credit for asset growth because the cash was disbursed to buy back the shares. However, since there are fewer shares outstanding, earnings per share is expected to be 7% because the same expected earnings growth is divided by a smaller number of shares.

Yes, of course, there are a myriad of additional factors that might elaborate the model, but they do not materially affect the fundamental idea that assets and expected earnings drive stock valuations. Dividend policy tends to be irrelevant to market valuation.

The problem, however, is that dividend policy is not irrelevant to many individual investors. Many investors who favor dividends have also decided that they are willing to spend the dividends to support their living expenses, but they are not willing to "touch the principal." Therefore, they skew their investment portfolio to enhance the dividend payout.

While they may never have to touch the principal, when they skew their investment portfolio toward dividend paying stocks, the principal of their portfolio must necessarily grow at a lower rate. If these investors took a more holistic view, they would recognize that dividends were largely irrelevant. If they need to live on some of their assets, and the company stock they own does not pay dividends, then they need to sell some shares, but the effect would be the similar to spending the dividends, while they leave the remaining principal alone.

However, there is a key question in the choice of a dividend-oriented stock investment portfolio. Is it worth higher investment fees, higher investment taxes, and a less diversified and sector skewed investment portfolio relative to owning the whole market, just so that they can maintain the illusion of not having touched the principal? And it truly is an illusion, because spending dividends rather than reinvesting dividends clearly does diminish the principal.

Section 10.5: Target date funds may not be the best choice

[Note that this section applies primarily to target date mutual funds. As Section 8.1 above indicated, ETF fund families have abandoned the target date investment market.

Therefore, the only low-cost target date investment funds available for direct investment by individual investors are target date mutual funds and not EFTs.]

Most commonly, target date investment funds are pre-fabricated retirement investment funds that are designed primarily to deliver a declining stock and increasing bond asset allocation over the years. Target date funds imply that equity allocation proportions should decline with age for everyone. Age declining equity allocations are not necessarily a given and would not be appropriate for many people.

The point of asset allocation is to align one's relative risk tolerance with the expected risk and return of your portfolio. While it is natural to assume that people will become increasingly risk averse with age, this is not necessarily the case. A wide variety of factors, such as stable income sources, wealth, investing knowledge, emotional control, etc. will affect whether one's risk aversion does or does not change with age.

For the rest of this section, however, let us assume that you would become more risk averse with age, and thus your investment portfolio should shift over time toward the greater stability of bonds and cash and away from the higher volatility of stocks.

> (This is a significant presumption, because investors need to ensure that the investment funds they choose will actually implement the asset allocation strategy that they want. You should note that making this presumption implies that you have done some financial planning, and you understand the asset allocation that is appropriate in your current portfolio. It also implies that you understand your risk profile, which underlies your asset allocation strategy, and you believe that you will become more risk averse in the future.)

Understand the structure of target date funds before investing

The financial crisis revealed that many investors just picked a target date fund with a particular year in the fund name that was closest to the year they hoped to retire. These investors naively selected target date retirement funds based on the fund name without understanding the concepts of "to retirement" versus "through retirement."

Many investors who were close to retirement were shocked by what happened to the value of their target date funds as the stock market crashed. Despite carrying the same numerical year in their names, some target date funds were designed with a glide path (the annually changing bond to stock ratio) that reached the most conservative level upon entering retirement, while others contained a glide path that continued throughout retirement. The equity allocation within different target date funds that had the same year in their fund names could differ by as much as 40 percentage points in their allocation to stocks. Investors need to do their homework when selecting any investment, and target date funds are no exception.

Target date funds theoretically target an average investor who has an average risk tolerance. However, investors vary in their tolerance for risk and thus their optimal asset allocation would

differ. This means that you should choose a target date fund based upon its expected investment risk and return profile rather than the year of retirement in the fund's name. Assuming that you were to choose a target date fund with the most personally appropriate investment risk exposure, then the correct choice of a target date fund would not necessarily be the fund with your projected retirement year in its name.

Any person believing that retirement planning requires simply choosing an investment fund with a year in its name that is close to the year that they intend to retire, is not putting sufficient effort into their financial planning. While target date funds have their virtues, for many they are perhaps a bit too convenient. They should not be a license not to think clearly about your lifetime and retirement financial planning.

Choosing a target date fund vendor

Numerous mutual fund investment fund companies offer families of target date mutual funds. Many of these target date fund families are offered only through employer retirement plans and/or are sold only via advisers. Target date funds are just combinations of assets classes and collections of investment funds with allocation percentages that change over the years, nothing about them affects that other investment fund selection principles that are discussed in this book. The most desirable individual funds are the lowest cost, most broadly diversified, passively managed index investment funds. Therefore, the most desirable target date funds are the lowest cost, most broadly diversified, collections of passively managed index investment funds.

So how does one go about choosing a target date ETF or mutual fund family, given the you know the risk profile of the particular fund within a target date fund family that would be most appropriate for you? Again, low cost is the dominant selection variable, which leads you to the most diversified index investment funds.

Since target date ETF choices are not available, you should be aware of low-cost target date mutual funds, as well. Vanguard again is the low-cost leader for target date mutual funds. Vanguard offers a low-cost target date mutual fund family for direct purchase by investors with expenses ranging from .12% to .15% depending upon the target year. Schwab offers a low-cost target date fund family with very low fees averaging .08% annually. Fidelity also offers a low-

cost target date fund family with very low fees averaging .12% annually. Be careful to select only the Schwab and Fidelity target date funds with “Index” in their names, because these are Schwab’s and Fidelity’s low-cost index target date funds. You can think of Fidelity’s, Schwab’s, and Vanguard's index-based target date fund families as your lowest cost reference point for target date mutual funds.

While still lower priced than the average target date fund family, Fidelity and Schwab offer target date funds that are noticeably higher cost. Fidelity's target date mutual fund family expenses range from .47% to .75% with an average expense ratio of around.65%. Schwab's target date fund family expenses range from .32% to .74% with the expense ratio increasing with the year. It is not clear the justification for these higher expenses. However, when compared to the expenses across all target date mutual funds, at least Fidelity and Schwab are noticeably lower than industry averages. The target date mutual fund industry average expense ratio exceeds 1%.

You could make your own low-cost target date fund

Even if:

A) you wanted to implement an asset allocation that declines with age,
B) you understand the correct asset allocation model for yourself, and
C) you found a target date fund family to implement your model,

you should realize that the allocations in target date funds are usually revised only once per year. While some thought does go into the construction of a target date fund family, there is relatively little "rocket science" involved in managing these funds from year to year. As the years pass, the proportions among the underlying funds are gradually adjusted, but the underlying funds themselves typically remain the same.

If you have decided, which you should, upon an overall asset allocation plan across all your investments, then you will re-balancing at least once a year anyway. It is a relatively trivial matter to shift your overall bond and stock proportions as you age. Compared to target date funds, you should be able to implement age related adjustment much more cost effectively using separate, low-cost stock and bond mutual funds. Therefore, target date funds provide relatively little value-added to a knowledgeable person. While target date mutual funds provide some

diversification across asset classes for those who lack any financial or investment plan whatsoever, they are usually not the right tool for those who do have a financial plan.

When you read and understand the "asset tax location" concepts that I have discussed in some of my other books, it will become clear that you should take into account the taxability of your account holdings when deciding where to hold stocks and bonds within your various investment accounts. Depending upon your taxable and tax-advantaged asset holdings, target date funds might never be an appropriate choice within any of your accounts. This is simply because, instead, you could improve your investment tax optimization and reduce your overall tax payments by splitting your stock and bond funds and holding them in different account types with different taxability characteristics.

In addition, concerning costs, target date funds are "fund of fund" arrangements that tend to be more expensive than choosing individual funds. Target date funds add additional fees to manage the long-term asset allocation model, while each target date fund year just varies the underlying stock, bond, and cash ratios of the underlying mutual funds. Even with the lowest cost investment fund vendors, like Vanguard and Fidelity, target date funds can still be somewhat more expensive that the underlying funds. Self-assembly is just as easy and can be cheaper these target date funds.

However, if self assembling target date funds seems like it is not worth the bother for a free dinner once a year or for a free TV once a decade, think about the comparison with the mutual fund industry average target date expense ratio of 1%. The savings would be worth about ten times as much, without taking into account the long-term compounded value of the money you save. Instead of giving your money away to the financial industry, you could have a decent dinner out for two almost once a month. Instead of a mid-sized TV once a decade you could have that TV and a nice long vacation for doing a minor amount of work at the outset.

And, as the years go by, managing your own "target date" funds will not really require extra work. Investors should rebalance their portfolios at least once a year anyway to maintain their asset allocation plan and investment risk exposure. Rebalancing needs to be done, regardless of whether the asset allocation percentages might shift progressively over the years. In rebalancing, some moving of assets among asset classes is inevitable every year. Therefore, it is really no extra work to increase your overall bond allocation by 1 percentage point of the total, while

reducing your stock allocation by 1 percentage point, for example. For much more than a pretty penny, that is essentially what target date funds will do for you year after year.

Of course, it is more complicated than that, but the complexities are associated with appropriate risk exposures and determining an asset allocation model for your entire portfolio – not the year-by-year percentage adjustments. Each investors needs a personally risk appropriate asset allocation plan and should implement asset location tax optimization strategies across all their portfolio assets.

Incidentally, you can understand what target date funds are actually doing just by looking at the fund family. Target date fund families typically have increments of 5 years or 10 years between one fund and another. Just look at how the fund family is managed over time and make comparisons. If you have this year's and last year's prospectus for a particular year fund you can see how things changed over a single year. Alternatively, comparisons between "adjacent" funds of plus or minus five or ten years in the family can also be made. Particularly for the low-cost vendors, the underlying low-cost funds will stay the same, while the percentages are just tweaked from one year to another.

Section 10.6: Invest in fixed income securities through low-cost bond ETFs

Bond trading is a very complex process that all individual investors should leave to professional fund managers. The pricing and trading of bonds and fixed income securities is far more convoluted than for common stocks or equities. Furthermore, bond pricing is much less transparent and can have wide spreads that are not visible to investors.

The bond trading process is highly opaque to the individual investor, and many people do not understand that the securities industry holds an even greater advantage in bond trading than in stock trading. In a very real sense, you buy bonds at fluctuating retail prices and sell at fluctuating wholesale prices, without knowing the difference.

Securities pricing in the bond market is much different from the stock market. While a firm usually has only one kind of common stock, it can have dozens or even hundreds of different outstanding fixed income securities from a single corporation. Few individual investors have the required skill, knowledge, information, and experience to assess bond market prices.

Fixed income securities or bonds have different valuation characteristics than do common stock securities, and bonds require different valuation methods. Common stock investments give the investor a claim to part of the market value of the firm and to its dividends, if the Board of Directors declares any such dividend payments.

Compared to common stock held by shareholders, corporate bonds give their holders a more senior claim to the firm's cash flow to pay bond interest and principal payments. If bondholders' claims cannot be met, then default and bankruptcy may occur. The firm could be forced to sell or liquidate, and equity ownership could even pass to its creditors and bondholders. Such events usually are difficult, very lengthy, and distasteful processes.

Figuring out whether bond obligations are likely to be fulfilled by issuers during the term of the bond is best left to professional bond investment specialists. This is called the default risk. Expectations about the varying potential for default can cause substantial price differences for bonds that otherwise have similar terms.

Many other complexities also affect bond pricing. Some of these valuation complexities include:

A) the effects of prevailing interest rates of comparable securities,
B) whether the bond is trading at a discount, par, or a premium,
C) embedded options, such as whether the bond can be called early and under what circumstances,
D) the duration of the bond,
E) the timing of interest payments,
F) varying ratings of credit-worthiness,
G) other indentures and covenants, etc.

These are among the many factors that make bond valuation very complex.

Investors can achieve higher returns and broader diversification by choosing the lowest cost bond ETFs

Bond mutual funds can provide a very high degree of fixed income securities diversification, and low-cost bond ETFs can do this very economically. For individual investors it simply is much more straightforward to hold bonds through a bond investment fund.

Once a bond fund establishes its "style" for the type, maturity, and quality of bonds it will hold, it purchases and holds bonds with an eye toward maintaining that style. Maintaining targeted maturity is relatively straightforward. Determining investment quality is less straightforward, but bond funds have analysts on staff and have access to the analytic data and services of bond ratings houses like Moody's, Standard and Poor's, and Fitch Ratings.

Fixed income ETFs offer additional trading efficiency advantages to individual investors. The professional traders of ETFs can conduct fixed income securities trading much more efficiently. Furthermore, fixed income investment funds trade substantial volume, which gives them leverage in negotiations and the ability to trade with different parties. Individual investors have no such leverage, and they must take or leave the price they are given.

Individuals often pay substantially higher spreads than professional fixed income securities traders do. Individual investors simply cannot tell whether they are getting a fair market price, when they buy or sell individual bond securities. This is not an issue of bond market inefficiency. Rather, it is a problem of grossly unfair treatment aided to the obscurity of the bond market pricing process and the willingness of certain traders to take full advantage of individual investors.

Section 10.7: Are higher bond fund fees ever worth paying?

Is it worth paying higher bond ETF management fees?

Many investors wonder whether it is worth paying higher bond fund expenses and fees. If they do pay more, will they get better performance? Will higher performance out-weight the added expenses? Investment research related to mutual funds provides a strong "no" as the answer. Simply put, if you pay higher bond fund fees, then these bond management expenses tend just to be a "deadweight" loss to you. The best bond fund buying strategy is to pick only very low-cost bond funds. When you pay more in bond mutual fund fees, you are just wasting your money.

A large body of research has been performed over the years on bond mutual funds, and it strongly supports buying the lowest cost bond mutual funds. Bond ETFs are much younger and hold far fewer assets than bond mutual funds, so we need to look to bond mutual fund

performance research to decide whether higher fees are likely to be worth paying. With bond ETFs, the good news is that the range of bond ETF expenses tends to be narrower. However, since bond ETFs are passive index funds, what is the rationale for paying higher fees even if the expense range is narrower. There likely is none.

We have learned from bond mutual fund research that when selecting among bond funds, investors should always choose rock bottom fund costs, after deciding on the type of bonds and the average duration of the bonds to be held in the portfolio. If you choose investment funds from reputable vendors and these funds have substantial assets and broadly diversified holdings, then the fund investment costs should be the primary differentiator.

The financial industry perpetuates self-serving and false "debates" about active versus passive investing, and the vast majority of these supposed debates center on equity or stock investment funds. Nevertheless, the proponents of higher cost, actively-managed bond investment funds also promote their own active versus passive debate. Yet, the evidence clearly is not at all in their favor.

Higher bond mutual fund fees hurt the performance of all types of fixed income funds

In "Bond Fund Returns and Expenses: A Study of Bond Market Efficiency," Professor William Reichenstein of Baylor University studied the relationship between bond mutual fund returns and expenses. * Professor Reichenstein analyzed bond mutual fund expenses and returns for the years 1994 to 1998.

* Reichenstein, William. "Bond Fund Returns and Expenses: A Study of Bond Market Efficiency." Journal of Investing, Winter 1999: 1-9

To ensure that he was comparing bond funds of similar characteristics, Professor Reichenstein grouped bond mutual funds by their investment styles. Fund groups were differentiated by maturity (short-, medium-, long-term maturities) and investment quality grade (low, medium, high quality). Within each of the nine combinations of these maturity and quality style groups, he assigned each individual fixed income fund to one of three equal sized groups according to the fund’s expense ratio (low, medium, high expenses).

Professor Reichenstein tested several theories about investment returns and expenses over 1-year, 3-year, and 5-year time horizons by comparing average investment returns between these

nine maturity and quality groupings. For example, he compared the average net return of the low-cost group to the medium cost and the high-cost groups of the same style to see whether higher fees produced greater returns, and so on. Without failure, Professor Reichenstein found that higher expenses predicted lower returns in 42 out of the 42 group comparisons.

Superior performance of specific bond mutual funds could have been obscured by comparing only the averages between groups. Therefore, Professor Reichenstein tested whether individual funds within his maturity and quality groupings delivered returns that compensated for their higher expenses. Again, his conclusion was no.

More evidence that higher bond fund expenses lead to lower bond fund performance

In 1991, Jonathan Clements used Morningstar data that grouped bonds into five categories: government backed mortgage bonds, corporate bonds, U.S. Treasury bonds, general municipal bonds, and high-yield bonds. * Clements found that in 28 out of 30 comparisons higher expenses meant lower returns to the investor. In 1999, Clements updated his 1991 study and found that higher expenses still meant lower returns to the investor, this time in 15 out of 15 cases. **

* Clements, Jonathan. "In Picking Bond Fund, Expense Factor Remains the Key." Wall Street Journal, April 4, 1991, p. C1.

** Clements, Jonathan. "If Your Manager is So Smart, Why are his Expenses So High?" Wall Street Journal, July 6, 1999, p. R1.

In addition, in 1999 John Bogle analyzed bond maturity and quality groupings for government, corporate, and municipal funds. * He found that in 24 out of 24 comparisons higher expenses meant lower returns. Combined, 109 of these 111 comparisons in these four studies indicated that higher bond expenses meant lower returns to investors.

* Bogle, John, C. “Bogle on Mutual Funds: New Perspectives for the Intelligent Investor”. Burr Ridge, Il: Irwin, 1994

Professor Reichenstein’s analysis also concluded that the performance of similar bond funds with and without front-end loads was not statistically distinguishable. Additional expenses and adviser sales loads just tended to result in a dollar-for-dollar reduction in investor’s assets. This means that advisers have no skill in identifying superior performing bond funds. When you pay

an adviser, they usually put you into a more expensive fund than the lowest cost fund available. You lose on both the wasted sales load and the higher fees.

In fact, his analysis indicated that higher bond mutual fund expenses were a dollar for dollar "deadweight loss." The higher the expenses, the lower the net return was for the individual investor. Professor Reichenstein's analysis also concluded that the performance of similar bond funds with and without front-end loads was not statistically distinguishable. Additional expenses and investment broker sales loads just tended to result in a dollar-for-dollar reduction in investor's assets. Advisors did not demonstrate any value-added to close the performance gap caused by their higher fees.

This deadweight loss on high bond fund fees comes right out of your wallet

Pay more to get less. Hmmmmm… Since when is that at good idea? Save your money. Ignore what commissioned bond mutual fund brokers and fee-based investment counselors tell you. Higher costs and sales loads to not deliver better bond mutual funds. Seek out and buy low-cost, no-load bond funds. Buy bond ETFs through discount brokers. Buy low-cost bond index mutual funds directly from the fund company to save money. It is your money. Hold on to it!

Section 10.8: Real estate ETFs versus privately sold REITs

Real estate is one of the market sector fund groups that are listed in this book. Certain investors want to increase overall diversification by adding passively managed real estate fund

positions in their portfolios. Broader equity indexes provide some exposure to certain kinds of real estate, but real estate ETFs can increase diversification for those who do not already own significant real estate assets.

ETFs in dozens of other market sectors are available, and many investors implement active "strategic asset allocation" or "sector rotation" strategies using these sector funds. However, these non-real estate sectors tend already to be well-represented within broader capitalization-weighted equity indexes. Therefore, an investor can easily obtain diversified exposure to market sectors without needing to assemble a portfolio using sector funds, which tend to carry higher management expenses.

The investment research literature indicates that a healthy skepticism of sector strategies is in order. Averaged across investors, individuals and professionals have not demonstrated success with active sector strategies. Sector rotation, sector strategic asset allocation, and sector market timing strategies have generally yielded inferior risk-adjusted results compared to low cost and fully passive index fund strategies. Furthermore, more broadly diversified buy-and-hold-and-hold strategies tend to be more tax efficient, while demanding far less time to implement that than active sector strategies. This is why no other sector funds – beyond real estate funds – are included in this book.

Private REITs promoted by and sold only through financial industry middlemen are inferior

Low cost publicly-traded REIT investment funds are preferable to private REITs, which are promoted exclusively by financial advisors. Investors always have the choice of purchasing much lower cost, publicly-traded REIT investments in the form or ETFs or index mutual funds.

Privately sold REITs are hard to value and have substantial additional fees that can drag down net investment performance. Furthermore, these private REITs lack active after markets for reselling shares. Investors are often faced with selling their shares at dramatic discounts, if they want to get out.

In 2012, Vault Partners together with the real estate studies center at the University of Texas Austin's McCombs School of Business announced a study of private REIT performance. Entitled

the "Non-traded REIT Industry Full-Cycle Performance Study," this research was a systematic evaluation of the net returns to investors over the full lifecycle of 17 large non-traded REITs.

Performing such a study requires a full lifecycle analysis of the internal rate of return on the capital investment of each REIT from the beginning through final liquidation. Returns include payments during the active life of the REIT and funds received in the final liquidation event, which could include either an IPO, a merger, or a sale of all assets.

In summary, of these 17 large private REITs, 12 REITs (or 71% of the total) underperformed passive benchmarks across their full lifecycle. This study's researchers concluded that the primary cause of underperformance was excessive sales charges and fees.

If you for some reason think that you could have chosen to invest in only the better performing 5 of these 17 funds and would have avoided all the rest, what is the basis of your confidence in picking only the winners? Considering that these 17 funds accounted for tens of billions of dollars in assets, it is reasonable to assume investors thought that they were also making smart choices. Most of the investors probably thought that they had done fine.

This study's methodology indicates that a proper comparison with lower cost passive REIT investment requires a full REIT lifecycle for analysis. How could investors know that their results were likely to be inferior to a public low-cost index ETF or mutual fund REIT? The good news for you is that you now know about this study, and you have a reason to just say no to a financial advisor pushing a private REIT.

You should also understand that weak regulations have allowed private REITs to maintain their original sales price as the current "market value" of shares for up to 18 months after the sales period ends. In addition, investors may have purchased their shares through an advisor much earlier in the sales period. Therefore, it could be several years before a private REIT is required to declare a "market value" for its shares versus simply continuing to state the current "market value" as original offering price per share.

In recent years, many large non-traded REITs have slashed the valuations that they had carried for long periods, and numerous articles have been published about this private placement valuation problem. Many investors have been very surprised about the fall in the "per share value" of the private REITs that their advisors sold to them.

In reality, all along these investors had been looking at the original sales price per share that was not necessarily tied to any market value per share relative to the underlying real estate assets. At least with a public REIT, an investor has a much better understanding of the current fair market value of their shares. Furthermore, if they want to sell, public REIT investors have a place to sell their shares without being surprised how little their private REIT shares might be worth.

Appendix: Personalized lifetime financial planning software

Section 1.1 A tool to improve your lifetime financial planning

Section 1.2: Executive Summary of VeriPlan

Section 1.3: VeriPlan's lifetime financial planning decision tools

Section 1.4: VeriPlan's Comparison Tool highlights differences between projection models

Section 1.5: VeriPlan's graphics and data outputs

To enhance the lifetime financial planning process for my clients, I have designed and developed VeriPlan during the past decade. VeriPlan is a sophisticated and automated personal lifetime financial planning application for individuals and families.

This Appendix explains VeriPlan's features, capabilities, and applications toward personal lifetime financial planning and investing. I use VeriPlan with clients who want to develop a comprehensive picture of their financial affairs projected across their lifetimes.

Individuals can buy a copy of VeriPlan and do their own lifetime personal financial planning. For do-it-yourselfers, I make VeriPlan available for a very modest licensing fee through one of my websites:

https://www.theskilledinvestor.com/VeriPlan/

If you go to the link above, look in the left-hand sidebar for the blue link titled; "Download the free VeriPlan User Guide in PDF format." When you click that link, you will get an instant download of the latest VeriPlan User Guide, which is extensive and detailed.

Section 1.1 A tool to improve your lifetime financial planning

VeriPlan projects fully integrated scenarios about your income, expense budget, debts, investment portfolio assets, investment returns, and investment costs within the context of the U.S. federal, state, and local income taxes that apply to you. VeriPlan presents all your personal lifetime financial modeling information in clear graphics and data tables.

VeriPlan is a self-learning lifetime financial planning and investment projection application. VeriPlan gives you significant personal insight into your most important personal finance and investment portfolio decisions. Through comprehensive and customized lifetime projections, VeriPlan's fully integrated financial and investment calculators model your particular financial situation across your adult lifetime.

You can easily customize any of your personal data and settings in VeriPlan. After you make any modification, VeriPlan automatically and instantaneously revises your complete lifetime projection. When you use VeriPlan's rich set of fully integrated “what if” financial modeling tools, you can take control of your own financial, investment, and retirement planning.

VeriPlan helps you analyze important personal finance questions.

Here are some examples of the kinds of questions VeriPlan can help you to answer:

A) Career planning:

* What are the long-term economic benefits of changing positions or employers?
* Would it make economic sense to return to school and improve my skills?

B) Debt management:

* What tradeoffs are associated with accelerating mortgage loan payments or other debt repayments?

C) Education expenses:

* Will I have enough college savings to pay for my children’s education while saving for retirement?

D) Estate planning:

* How could my savings rate and investment strategy affect the size of my estate?

* After my expenses, how much could I give or bequeath to family and charities?

E) Insurance budgeting:

* How large might my exposures to insurable financial risks be over time?
* How might different budgets for insurance premiums affect my financial plan?

F) Investment cost reduction:

* What investment returns might I earn net of investment costs?
* How much could I waste on unproductive investment costs?
* How might I improve my investment returns by keeping costs to a minimum?

G) Investment returns:

* How does my current investment strategy compare to a passive strategy focused on long-term, risk-adjusted returns net of investment costs and taxes?

H) Investment risk management:

* What returns might I expect from the balance of expected asset class investment returns and risks that I have chosen?
* Am I saving enough to stay within my investment risk and return comfort zone and still reach my financial planning goals?
* If I were to lose income in the future, how long would my liquid investment portfolio assets cover my projected expense budget?

I) New business ventures:

* What are the likely long-term benefits and risks, if I forego current income to start a business?
* Could I self-fund my business venture or would I need external capital?

J) Real estate planning:

* When will I have sufficient capital to buy real estate?
* How does mortgage debt affect my investment portfolio and financial goals?

K) Retirement planning:

* Would I have sufficient investment assets to retire early?
* Would my investment assets cover my expenses, if I live a very long time?
* What is a relatively safe asset portfolio withdrawal plan?

L) Saving goals:

* Am I saving at a sufficient rate to fund all my future financial planning goals?

* How much benefit might I expect from increasing my income and/or reducing my expense budget?
* What is the long-term value of saving some or all of my bonuses?

M) Tax reduction:

* Am I managing my investments from an income tax efficiency standpoint?
* How much should I put into either taxable, traditional retirement accounts, or Roth retirement accounts?
* Would my retirement portfolio assets be adequate after income taxes and other taxes are paid in retirement?

Section 1.2: Executive Summary of VeriPlan

Organization, Graphics, and Data:

VeriPlan provides 34 user worksheets organized into groups. VeriPlan is a lifetime projection model for 1 or 2 earners from 18 to 100 years old. Projections can begin at any age from 18 to 99 and continue through age 100. VeriPlan automatically provides 18 graphics and a consolidated worksheet with the data for these graphics. All VeriPlan projections extract inflation and use real or non-inflationary dollars with constant purchasing power over your life.

Earned and Other Income:

Regular employment and/or self-employment income can be projected for either earner. You can also enter separate information about other income sources that you expect to have.

Pensions, Annuities, Deferred Compensation, and Social Security Income:

VeriPlan projects up to 10 separate pension, deferred compensation, and annuity payouts. For each pension or annuity, VeriPlan automatically projects: a) the dollar amount of the monthly payment, b) separate real dollar growth rates before and after the first payment, c) whether payments begin at a specific age or at either user's retirement, d) duration of payments, and e) taxability of payments. Concerning your Social Security retirement payments, you can set current dollar levels for your entitlements, adjust the age to begin to receiving payments, and scale back the amount of your projected payments, if you wish.

Debts:

VeriPlan automatically projects the pay-off of up to 25 current debts. You can plan for the accelerated repayment of any or all debts. Interest on selected debts can be tax-deductible. Also, VeriPlan automatically manages mortgage repayments on your planned future purchases of up to three homes.

Financial Assets, Real Estate, and Property:

VeriPlan projects your asset holdings in five asset classes. Individually and automatically, VeriPlan will manage separately up to 24 cash assets, 24 bond and fixed income assets, 99 stock and equity assets, and 20 property, real estate, and other assets. For each of your asset holdings, VeriPlan collects information about share ownership, values per share, investment costs, and account taxability.

VeriPlan's integrated, automated, and high-performance asset projection facilities enable the rapid evaluation of a wide range of customized financial plans. Growth of your projected "centerline" investment asset values are based on 85-year historical risk-adjusted and inflation-adjusted asset class growth rates. Asset class growth rates are fully user-adjustable using either VeriPlan's systematic and/or judgmental growth rate adjustment tools.

For each of your financial asset holdings, VeriPlan separately and automatically projects annual returns, return variability, taxes, and investment costs. VeriPlan automatically projects your net annual holdings by asset class, including new investments from future positive annual net earnings, reallocations, and withdrawals due to projected negative net earnings. VeriPlan automatically assesses your overall annual net portfolio returns, tax-efficiency, and investment cost-efficiency.

VeriPlan can project these asset class aggregates, even though the net valuation of your individual financial asset holdings may change at different rates due to return adjustments you make, varying investment costs, uneven taxable distributions, and legal differences in account taxability. VeriPlan can provide significantly more personalized insight, because its projections focus on your particular projected financial life situation, instead of relying upon arbitrary averages across a general population.

Taxes:

VeriPlan automatically projects your lifetime tax obligations in eight separate tax categories. It automatically projects your particular federal, state, and local income tax rates and limitations; your tax exemptions, adjustments, and deductions; and your property and other taxes. VeriPlan supports the 'Single' and "Married, Filing Jointly' federal income filing statuses and automatically applies the tax rates and limits associated with these filing statuses. To prevent obsolescence, you can change VeriPlan's tax rates and limits, if laws change.

VeriPlan applies current variable U.S. federal ordinary income tax rates and limits. It contains tax rate information for the 50 United States and Washington, D.C. and automatically applies either variable, flat, or no income tax for any state that you choose. VeriPlan can automatically apply any local ordinary income taxes. Furthermore, it can develop projections using different levels of federal, state, and local taxable income.

VeriPlan automatically projects annual tax exemptions and their phase-outs for up to 10 dependents and up to 6 different adjustments to your taxable income. VeriPlan automatically projects your federal income tax deductions and applies the more favorable of either the standard deduction or your itemized deductions. VeriPlan automatically applies Social Security (FICA) and Medicare taxes, and projects either employee or self-employment tax rates, as appropriate.

Concerning your assets, VeriPlan automatically applies long-term capital gains tax rates on capital appreciation and qualified dividend distributions including asset withdrawals net of your accumulated asset tax basis. Over your lifetime projections, VeriPlan will automatically track your cumulative cash, bond, and stock asset class tax basis. VeriPlan also automatically projects your property, real estate, and other assessment taxes.

Traditional and Roth Tax-advantaged Retirement Plans:

VeriPlan has automated your lifetime projections regarding employer retirement plans and personal IRA accounts that allow you to defer taxation or to avoid future taxation altogether. VeriPlan automatically projects separate values for your taxable accounts, traditional retirement accounts, and Roth retirement accounts. For traditional and Roth IRA and employer-sponsored retirement accounts, VeriPlan automates the projection of your lifetime contributions,

deductions, asset growth, withdrawals, and taxation. It automatically assesses federal and state early withdrawal penalties, as required.

Updates and enhancements

VeriPlan has been updated and enhanced at least once each year for almost twenty years. However, since VeriPlan is designed to be user updatable, there is no requirement that you purchase an enhanced version of VeriPlan and there is no requirement that you purchase a support contract. Your initial, very modest license fee is the only charge for VeriPlan.

VeriPlan has been fully functional and robust since 2006. Each year since then some additional functionality has been added, but VeriPlan's core functionality has been very complete for many years.

The primary reason for annual updates to VeriPlan are to update:

* US Federal and 50 state + DC tax rates, limits, phase-outs, and other tax parameters, including retirement plan rule changes, and
* historical asset class returns, inflation, and volatility data for 1928 through the most recent year

Because facilities are provided within VeriPlan for current licensees to update these parameters in their own copy with more recent information, it is not necessary to upgrade.

If you would like to understand the updates and enhancements that have been made to VeriPlan in the past several years, go to this web page:

VeriPlan Lifetime Financial Planner - Annual Version Enhancements

or

https://www.theskilledinvestor.com/VeriPlan/1915/veriplan-lifetime-financial-planner/

Documentation:

VeriPlan's worksheets provide extensive, integrated documentation. VeriPlan is designed to be self-training, and you do not need a user manual. Just read and follow the instructions on the spreadsheets.

Nevertheless, a separate and free VeriPlan User Guide with additional information is also available. The VeriPlan User Guide is free to anyone – whether or not you have a license to the VeriPlan software.

You can find where to download this user guide in PDF, MOBI, EPUB, and other formats by going to this web page:

https://www.theskilledinvestor.com/VeriPlan/1915/veriplan-lifetime-financial-planner/financial-planning/

If you go to the link above, look in the left-hand sidebar for the blue link titled; "Download the free VeriPlan User Guide in PDF format." When you click that link, you will get an instant download of the latest VeriPlan User Guide in PDF format, which is extensive and detailed. If you want a different format, click on the green VeriPlan User Guide graphic in the middle of the page and this will take you to Smashwords, where you can find these other reader formats.

Systems Platforms:

VeriPlan is a fully self-contained Microsoft Excel spreadsheet application that runs in a standalone configuration with local data storage. To operate, VeriPlan requires a Microsoft Windows PC or Apple Macintosh with ANY Microsoft Excel version from 2002 up to the most recent version release. VeriPlan will run on your Windows PC or Mac with Excel, even if you have a relatively "ancient" system.

License and Purchase Information:

VeriPlan is licensed and is for personal, non-commercial use by one (1) household. Buyers receive an unconditional thirty-day (30 day) satisfaction guarantee.

The price for VeriPlan is lower than all other full featured cash flow projection modeling tools. You can learn all the details about it and order it from this web page:

https://www.theskilledinvestor.com/VeriPlan/

Section 1.3: VeriPlan's lifetime financial planning decision tool sets

Asset Allocation Tools:

Your asset allocation strategy allows you to align the risk of your investment portfolio with your risk tolerance. VeriPlan provides five user selectable and adjustable asset allocation methods for your lifetime projections. Fixed, variable, and age-based allocation mechanisms are provided. Reallocations are performed automatically at the beginning of all subsequent projection years.

Cost-Effectiveness Tools:

Excessive investment costs are a huge problem for the average investor. VeriPlan's projections automatically analyze the impact of five types of investment expenses across your lifetime: 1) purchase fees and loads, 2) management fees, 3) marketing fees, 4) transactions costs, and 5) account custody fees. VeriPlan fully automates the comparison of lifetime investment costs between the investment costs of your current financial asset portfolio and the costs that you believe are reasonable to pay.

Expense and Savings Tools:

VeriPlan allows you to set you annual expenses, and change your future expense levels and expense growth rates. VeriPlan also allows you to enter major planned expenses year by year and change growth rates relative to average inflation. You can enter positive and negative expense adjustments and growth rates in any projection year.

VeriPlan's expense planning tools can be used as a "Children's Education Expenditure Planning Tool", and as a "Mid-Career Education Planning Tool" to model tradeoffs associated with returning to school for career advancement.

VeriPlan also provides a 24-month household expense tracking, budget planning, and expense versus budget variance analysis tool. This optional use budget tool includes both standard expense categories and user defined expense categories. If you already use another budgeting tool, you are not required to use VeriPlan's budgeting tools. Instead, you can use the budgeting system that you already have to derive the expense numbers that you would enter into VeriPlan.

Current and Future Debt Tools:

Regarding any current debts that you have, VeriPlan automatically repays interest and principal as you specify. You can use VeriPlan’s debt management facilities to analyze and plan for the accelerated repayment of any or all of your current debts.

In addition, excess consumption and the cost of associated debt can be very destructive, when you do not live within your means. This tool allows you to set a debt interest rate for future unfunded consumption. When your projected expenses exceed your projected income, VeriPlan automatically accumulates excess consumption debt and unpaid interest, after your cash, bond-fixed income, and stock-equity financial assets would be depleted. If subsequent positive net income becomes available, VeriPlan will automatically retire some or all of this unfunded consumption debt.

Historical Asset Class Returns:

VeriPlan's automated "centerline" projections are based on the very long-term, historical securities market rates of return that have been achieved in the cash, bond-fixed income, and stock-equity asset classes over the past 85 years. You can adjust these projected rates of return, using VeriPlan’s various portfolio risk tools.

VeriPlan’s projections automatically deduct your taxes and investment costs from your financial asset class returns. Furthermore, across your lifetime, VeriPlan will automatically project the value of your real estate, property, and other assets, which are not priced currently on

real-time securities markets. VeriPlan uses the current fair market value and future growth rate assumptions that you set for these real estate, property, and other assets.

Home Purchase Tool:

VeriPlan provides this tool for users who plan to purchase from 1 to 5 homes at various years in the future, as well as up to10 rental real estate properties. For such future home purchases, this tool automatically takes into account: a) the planned purchase price, b) closing costs, c) settlement cash required, d) mortgage debt to be assumed, and e) expected interim and subsequent price changes.

Portfolio Asset Class Rebalancing Tools:

VeriPlan aids in reallocating currently held financial assets, according to both the asset allocation and the asset tax location models chosen. Thus, it simultaneously takes into account the distribution of cash, bond, and stock assets across taxable accounts, traditional tax-advantaged retirement accounts, and Roth tax-advantaged retirement accounts.

Portfolio Risk Tools:

VeriPlan provides several combinable methods to develop projections automatically using asset class return assumptions that differ positively and/or negatively from VeriPlan's "centerline" historical assumptions:

1) The Projection Variance Tool allows you to vary asset class returns upward or downward automatically in proportion to their historical volatility or risk.
2) The Asset Class Return Adjuster allows you to vary financial asset growth rates automatically on a one-by-one judgmental basis.
3) The Current Portfolio Revaluation Tool to help users understand the potential effects of substantial changes in near-term portfolio asset values.

Portfolio Safety Tools:

Individual investors face a dilemma. Both less risky and more risky investment strategies may not achieve desired results for different reasons. When assessing investment strategies with

different risk levels, it can be helpful to understand how the "safer" portion of your portfolio assets might evolve across your lifecycle. VeriPlan's Portfolio Safety Tools automatically project how long your cash and shorter-term fixed income assets would cover your projected expenses, if all your expected income sources ceased at any point. It automatically measures your projected financial capacity to weather future financial risks.

Retirement Planning Tools:

With this tool, you can set individual retirement ages for either earner. You can select whether or not to retire simultaneously. You can also adjust your expected ordinary living expenses in retirement and the growth rate of those expenses. Concerning Social Security retirement payments, you can set the levels of your entitlements and adjust the age at which you would first begin to receive Social Security payments. Furthermore, you can scale back the amount of your projected Social Security payments, if you wish. Finally, because much older workers can face significant erosion of real dollar wage rates, you can adjust VeriPlan's assumptions about real dollar wage erosion for earnings at ages over 65.

Tax-Advantaged Plan Tool:

VeriPlan has automated your lifetime projections regarding employer retirement plans and personal IRA accounts that allow you to defer taxation or to avoid future taxation altogether. VeriPlan automatically projects separate values for your taxable accounts, traditional retirement accounts, and Roth retirement accounts. For traditional and Roth IRA and employer-sponsored retirement accounts, VeriPlan automates the projection of your lifetime contributions, deductions, asset growth, withdrawals, and taxation. It automatically assesses federal and state early withdrawal penalties, as required.

Your settings on this tool control your projected tax-advantaged plan contributions funded from your future positive net income and/or from your future taxable financial assets, up to current legal annual contribution limits. This tool allows you to determine the portion of your projected annual contributions that would be deposited automatically into either traditional tax-deferred accounts or Roth accounts.

1) The Total Contribution Limitation Tool allows you to set your personal limitation on overall tax-advantaged account deposits, as a percent of your future annual positive net cash flows.
2) The Roth Contribution Limitation Tool allows you to set the percentage that Roth contributions would be of your total annual contributions into both traditional and Roth accounts.
3) The Roth year-by-year Conversion Planning Tool helps you to understand which years in the future might be better to do Roth conversions, and it helps you to judge the federal tax rates on the amount of Roth conversions you plan to make in each year. Depending upon the year-by-year Roth conversions amounts that you manually enter into the table to the right, VeriPlan will automatically assess federal, state, and or local income taxes in your projections. Any state or local income taxes would be in addition to the federal tax information provided below. VeriPlan's Roth conversion tool also allows you to understand the current and future impact of annual conversions on Social Security retirement income subject to taxation and on any IRMAA Medicare insurance premium subsidy reductions related to relatively high income in retirement.

Section 1.4: VeriPlan's Comparison Tool highlights differences between projection models

Once you have loaded relatively complete financial data and set your assumptions, you can begin to evaluate alternative financial decisions. By comparing one VeriPlan projection scenario to another, which uses somewhat different data and/or assumptions, you can evaluate the relative desirability of these alternatives. Through an iterative process of evaluating alternatives, you can refine the lifetime financial plan that you intend to implement. In general, to determine whether personal financial "Strategy A" or "Strategy B" is likely to be preferable to you, compare two VeriPlan projection scenarios to see which yields a better long-term financial result.

VeriPlan is built on the Microsoft Excel spreadsheet engine, and runs on any Windows PC or Mac with any version of Excel. In spreadsheets, normally any change that you make to one cell will change the results of all other spreadsheet cells that are connected by the underlying logic. Therefore, spreadsheets do not automatically "save the state" of the model that existed just

before the most recent change. Nevertheless, model comparisons are possible, if you first lock or "save the state" of a projection model, before making further revisions.

The VeriPlan Comparison Tool allows you to lock the state of any of your projection models. This is achieved by following some simple procedures to copy all of VeriPlan's output data and paste them into another spreadsheet as values only. Doing this will lock the "state" of the data values from your prior baseline model. Then, you continue to revise one or more assumptions and/or data inputs within VeriPlan to reflect any alternative personal financial strategy. VeriPlan's Plans Compared worksheet will then automatically subtract the "live" data being output from the revised model from the "locked" data values of the prior baseline model. This allows you easily to evaluate the differences between two lifetime projection models.

There is also another use for VeriPlan's Comparison Tool features. Some spreadsheet users might wish to develop external spreadsheets for specialized purposes and link those spreadsheets to VeriPlan's projection data output. VeriPlan Comparison Tool allows external copying and live linking of all VeriPlan output data.

Section 1.5: VeriPlan’s graphics and data outputs

Overview of VeriPlan's graphics and data outputs

VeriPlan's graphics and data tables allow easy comparison of projection scenarios. VeriPlan presents your projections in 25 graphics, which are described below. Whenever you make any change, VeriPlan will automatically and instantly revise these graphics. In addition, the data worksheet will be updated automatically, as well.

You can find all the data for all the projection series that VeriPlan uses to draw these graphics on the "GRAPHICS DATA" worksheet which is the right most spreadsheet tab within VeriPlan. The Graphics Data worksheet lists the data for all graphics in the order that the graphics tabs appear within VeriPlan.

VeriPlan projects your individual or family financial affairs over a lifetime, as if you were a business using cash flow planning methods. VeriPlan puts you in the position of general manager, and it provides graphics and data worksheets that a general manager might need to understand long-range financial projections regarding your personal financial planning.

The unit of time on the horizontal axis of every graphic is one year, and all graphics cover ages 18 to 100. Your particular projections will begin with the initial age of Earner #1. All graphics lines begin with the initial age of Earner #1.

VeriPlan's automated financial projection graphics

This numbered list of VeriPlan's graphics is current as of 2023. Following this numbered listing are sections that correspond to each of these graphics and that provide a description of each graphic with an example.

The sample graphics below with a gray background are from an earlier version of VeriPlan. They have been retained here, because each of these graphics presents a particular projection scenario that is described in the text along with the graphic. These prior graphics are the same in the latest version of VeriPlan, except that the backgrounds are white rather than gray. If you see a graphic with a white background, these graphics were more recently added to VeriPlan.

1) INCOME: Non-Asset Income -- Earned, Pension, Annuity, Social Security & Other

2) EXPENSES: Ordinary Living Expenses with Other Planned & Adjusted Expenses

3) DEBT PAYMENTS: Debt Payments

4) PERSONAL TAXES: Tax Payments

5) RENTALS+PROPERTY: Income, expenses, debt payments, taxes, and cash flow from for rentals and other properties

6) CASH FLOW: Non-Asset Cash Flow

7) SAVINGS RATES: Pre-Retirement Savings Rates with Investment Debt Repayments

8) HUMAN CAPITAL: Expected Income and Savings Before Retirement

9) ALLOCATION: Financial Asset Allocation

10) TOTAL ASSETS: Financial Assets, Property, and Debts with Assets Lost to Excessive Investment Costs

11) ASSET FLOWS: Non-Asset Cash Flow with Cash, Bond, and Stock Financial Asset Returns

12) DEBT OWED: Personal, real estate, and business debt principal owed

13) ASSET TAXABILITY: Taxable, Traditional & Roth Tax-Advantaged Financial Assets

14) TRANSACTIONS: Taxable & Tax-Advantaged Deposit & Withdrawal Transactions

15) RETIREMENT INCOME: Retirement income sources and pre-tax Required Minimum Distributions (RMDs) after Earner #1 retires

16) WITHDRAWALS: Withdrawal Rates from Cash, Bond & Stock Assets

17) RETIREMENT SHORTFALLS: Cash flow shortfalls after Earner #1 retires including RMDs

18) SAFETY MARGIN: Emergency asset coverage of expenses without other income

19) VALUE OF TIME: Hourly wage equivalent value of income, expenses, and financial assets

20) COST-EFFICIENCY %: Net Cash, Bond & Stock Financial Asset Returns with Returns Lost on Excessive Investment Costs

21) COST-EFFICIENCY $: Net Cash, Bond & Stock Financial Asset Returns with Returns Lost on Excessive Investment Costs

22) SALES LOADS: Lost Returns on Past and Future Financial Asset Sales Load Purchase Fees

23) LIFE EXPECTANCY: Average U.S. male and female total life expectancy and remaining life expectancy by current age

24) HISTORICAL RETURNS: U.S. Financial Asset Class Returns from 1928 to the present

25) ROLLING RETURNS: Annualized U.S. Financial Asset Class rolling 5-year real dollar asset class returns and CPI inflation from 1928 to the most recent year

VeriPlan's graphics provide an integrated projection of your lifetime finances. Summaries of each are provided below.

VeriPlan uses real, constant purchasing power dollars with inflation removed. All dollar-based numbers in VeriPlan are "real" in the sense that they assume constant purchasing power for currency over time. To understand more about the 90+ year history of US inflation and major financial asset class returns and variability, inspect the Historical Returns graphic and read the Risk & Returns worksheet.

Inflation (and sometimes deflation) are facts of financial life, but they are not systematically predictable. Making dollar projections that include an inflationary component adds little value to projection modeling. To the contrary, nominal dollar projections that include inflation assumptions tend more often to confuse decision-making. Projections with inflation may create an illusion of growth, when the opposite might be true. Your nominal assets could increase by five times, but the price of a loaf of bread could increase by ten times. Projection modeling using real, constant purchasing dollars solves this problem.

The impact of inflation on various investments needs to be considered when making investment choices. Inflation's unpredictability limits your strategic investing options. Generally, a fully diversified asset strategy will reduce the variability associated with inflationary differences between sectors, while leaving an exposure to the general rate of inflation. Your asset allocation can be used to adjust investment exposure to asset classes that historically have exceeded inflation by a lesser or greater amount.

1) INCOME Graphic

Non-Asset Income -- Earned, Pension, Annuity, Social Security & Other

(Real $/year by age; Excludes reinvested asset returns and asset withdrawals)

This INCOME graphic projects the income associated directly or indirectly with earned income sources (excluding income from your asset portfolio), including:

* Earned employment and actively-managed business income with your real dollar growth rates for Earners #1 and #2 that you entered on the income worksheet. (Note that earned income for Earners #1 and #2 will also reflect any year-by-year income adjustments that you have made on the income worksheet.)
* Pension, annuity, and Social Security income from the retirement worksheet
* Other income with adjustments from the income worksheet

No income from assets nor any capital appreciation is represented on this graphic, because this information is provided on other asset related graphics. Asset income is assumed to be taxed and reinvested. Assets would be withdrawn only in years when you are projected to have a cash expense-to-earned income shortfall.

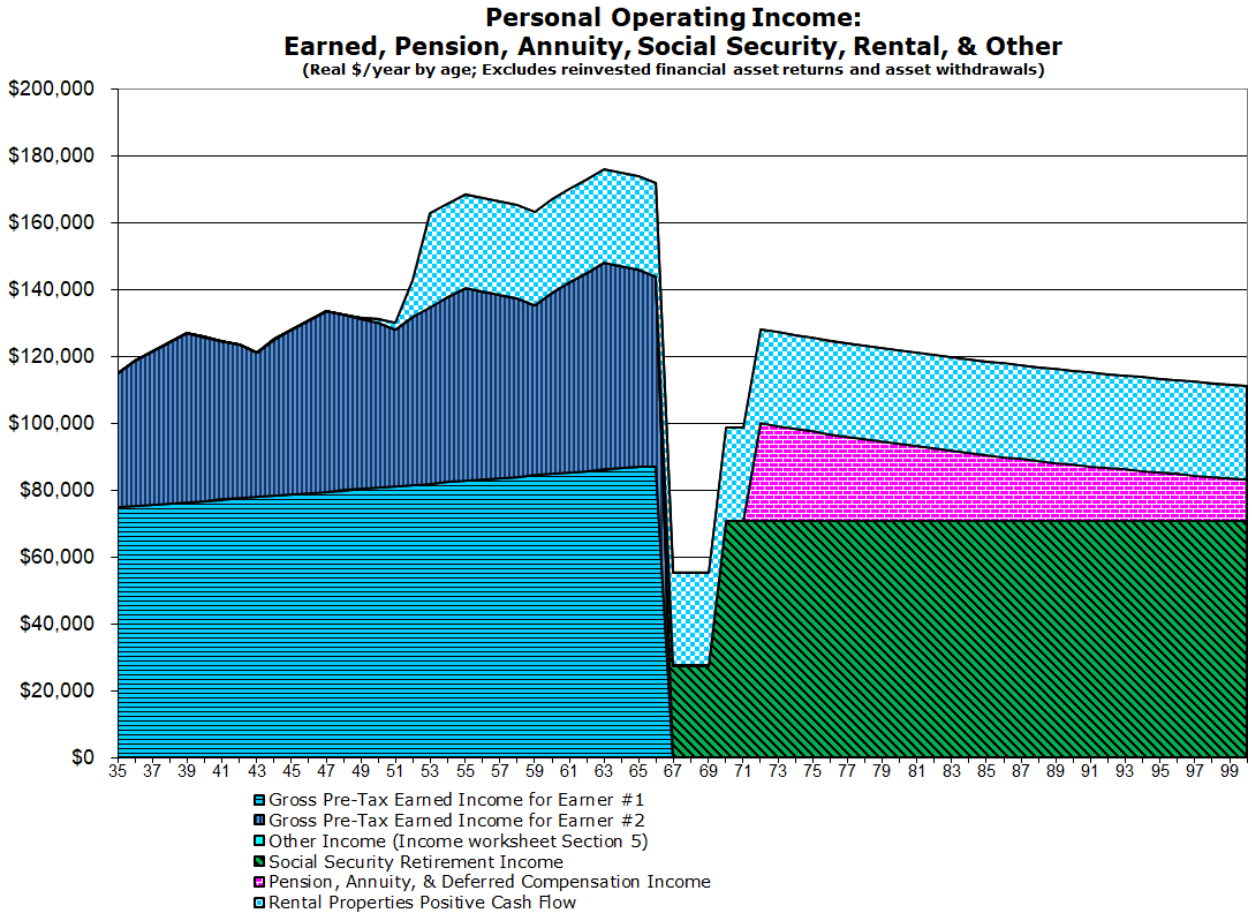
INCOME graphic example

In this sample income graphic below, Earner #1 is projected to have moderately increasing real dollar wage and salary income reflecting a .5% annual income increase relative to consumer price inflation. Earner #2 is self-employed and earns less, but projects a slightly steeper increase in annual income at 1% above inflation. In addition, Earner #2 has used VeriPlan's year-by-year positive and negative income adjustments facility to model that the vicissitudes of four primary business cycles in the future. Because both of these earners are relatively young, motivated, and intent upon career advancement, they have developed income projections that exceed inflation, which is atypical of most workers.

This graphic also demonstrates VeriPlan's ability to project other sources of income. First, they own a small rental property that they expect will produce modest but steady income, and this is reflected in the cross-hatched and light-blue colored bar that extends across their projections. While they currently own this rental property, the debt is being paid down and is not yet cash flow positive. At about age fifty, this rental property is expected to begin to be cash flow positive and the taxable net income will flow into the family's overall income picture.

Second, in retirement, they both expect to have Social Security retirement income, that one person will first accept at age 67, while the other will wait until age of 70 to maximize these Social Security cost of living adjusted retirement income sources. These Social Security

retirement income payments are projected to maintain their purchasing power due to cost-of-living increases in retirement.



Finally, Earner #1 is among the lucky and relatively few young workers with a funded, albeit modest, traditional retirement pension. This pension is projected using VeriPlan's pensions, deferred compensation, and annuities features. This particular pension projection assumes that the retirement pension will keep pace with inflation up until retirement, but once pension payments begin at age 70, they will not be subject to cost of living increases and will decline annually by close to 3% due to expected inflation. This accounts for the declining slope of the solid pink bar from age 70 to 100.

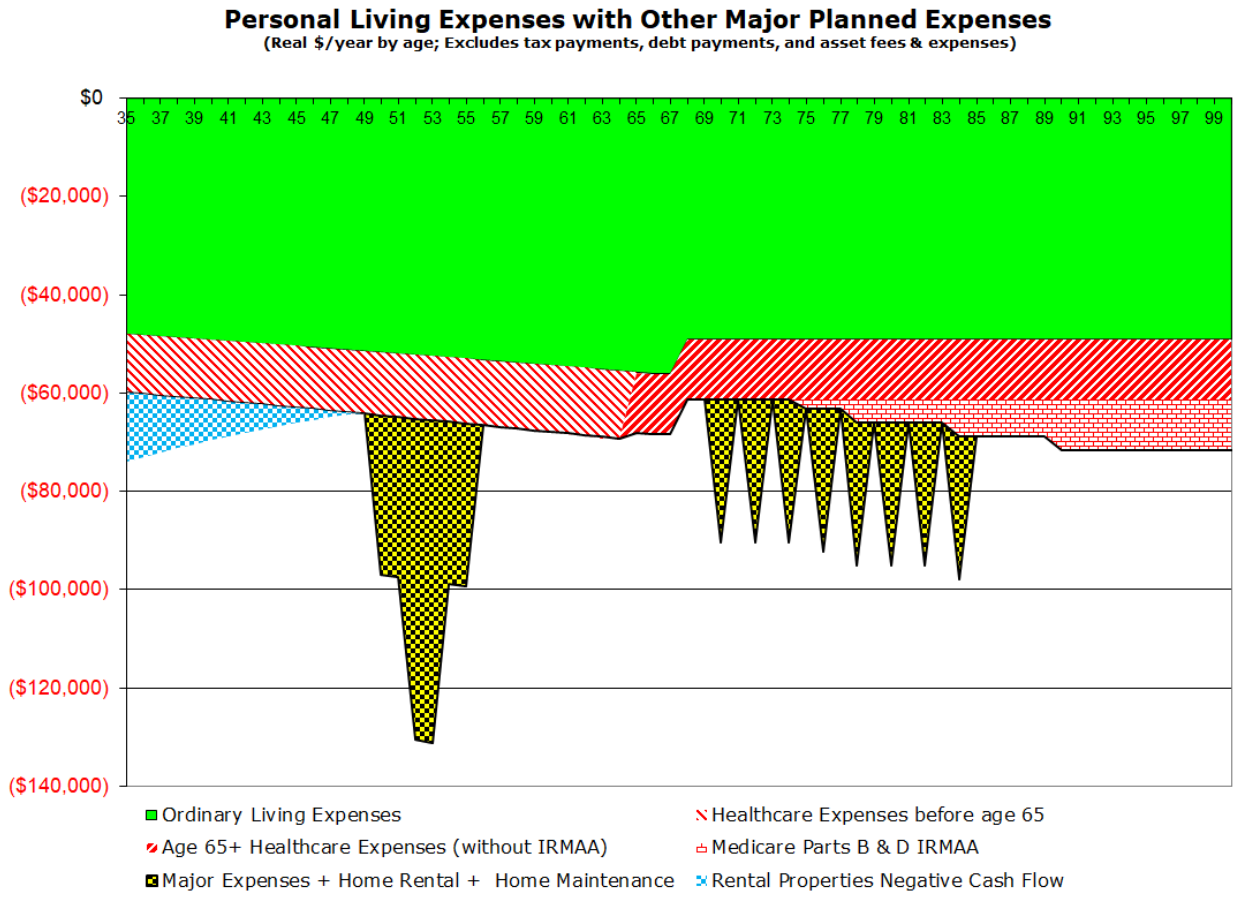
2) EXPENSES Graphic

Ordinary Living Expenses with Other Planned & Adjusted Expenses

(Real $/year by age; Excludes tax payments, debt payments, and asset fees & expenses)

This EXPENSES graphic projects your expenses related to living, but not the cash outflows related your debts or taxes or any current additions to savings or investments. This graphic includes your ordinary living expenses and major planned expenses with year-by-year adjustments and any real dollar growth rate adjustments relative to general CPI inflation that you might set on the Expenses worksheet.

EXPENSES graphic example



Similar to their assumptions about real dollar earnings growth, this couple has assumed that their ordinary living expenses, will increase by .5% above the prevailing rate of consumer price inflation. Then, VeriPlan allows them to adjust their ordinary living downward somewhat when Earner #1 retires at age 67. After that, their ordinary expenses are expected to track the average level of CPI inflation.

In retirement, they expect that their ordinary expenses will be 90% of their expenses immediately prior to retirement and then will remain constant with respect to inflation. However,

just after retirement and every three years thereafter through age 85, they have also used VeriPlan's year-by-year expense adjustments features to add $25,000 in expenses to fund a cruise or similarly expensive vacation. These expenses are represented by the expense spikes with the yellow and black cross hatched area during retirement.

They also have two young children, separated in age by two years. The yellow and black cross hatched area from ages 50 to 56 projects the expected net cash cost (after scholarships) of sending both children to four-year colleges in consecutive years with two years of overlap, when both are in college. They have used VeriPlan's year-by-year expense adjustments features to model annual college costs of $30,000.

This graphic also shows a light blue wedge that declines from ag 36 to 48. This represents the negative cash flow related the rental property that they own and that must be funded. As the rental real estate debt is paid down, they begin to breakeven and thereafter have positive cash flow.

Finally, this couple has used VeriPlan's Medicare cost features to project their healthcare costs in retirement, as well as their out-of-pocket healthcare costs prior to retirement. The various red layers below the green ordinary expense amounts represent these healthcare cost projections.

VeriPlan explains the Medicare retirement healthcare system and provides Medicare expense defaults that users can change to project their retirement healthcare costs. In addition, VeriPlan will automatically track your total retirement income and calculate when you might have high enough retirement income that would make you subject to IRMAA Medicare insurance premium subsidy reductions. Knowing in advance that you could be subject to IRMAA reductions allows you to use other VeriPlan features, such as VeriPlan's Roth year by year conversion analysis features that could reduce your IRMAA liabilities later on.

3) DEBT PAYMEBTS Graphic

Debt Payments (Real $/year by age; Nominal dollar debt payments are converted to real dollars with a 3% inflation adjustment.)

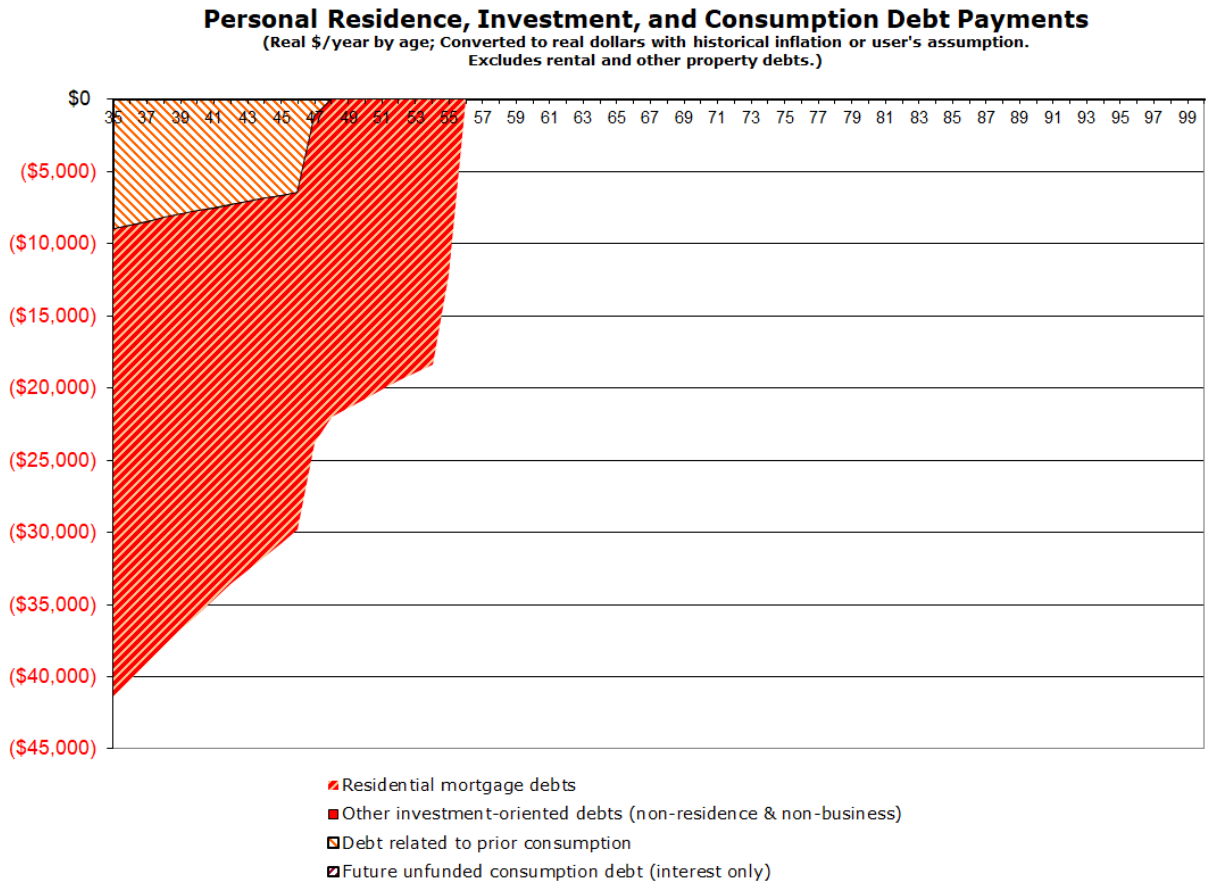
This DEBT PAYMENTS graphic projects your annual debt repayment obligations according to your settings on the Property+Debts worksheet. On the Property+Debts worksheet, you can classify your debts as consumption-oriented or investment-oriented. Consumption-oriented debts represent past consumption that you have financed. Investment-oriented debts are those you take on with a rational expectation that they will increase the value of your human capital and/or portfolio assets.

Because VeriPlan uses real or constant purchasing power dollars with inflation extracted throughout your projections, your future debt payments related to your current debts will be discounted. If at any point in the future, your expenses would exceed your net income and would fully deplete your accumulated cash, bond, and equity financial assets, then VeriPlan automatically would begin to accumulate an "unfunded consumption debt" loan for you. On the debts worksheet, you can set a projected loan interest rate for any such unfunded consumption debt. Were this undesirable situation to occur in the future, then the required interest-only annual payment on this accumulated unfunded debt would display automatically on this DEBTS PAYMENTS graphic.

DEBTS graphic example

The sample Debts graphic below reflects two different. The first thing to note is that debt payments decline significantly over time. This decline in annual real dollar payments is due the fact that VeriPlan’s projections are presented in real, constant purchasing power dollars. In life, when you pay off debts, debts that require a fixed nominal dollar amount to be paid per period are actually paid with cheaper and cheaper dollars as time goes on. General inflation undercuts the value of the dollar over time, and thus your future debt payment cost less in real dollar terms. are repaid in nominal dollars that inflate with time.

The lighter red cross-hatched area represents higher interest rate credit card debt that they intend to pay off over ten years. The bulk of the debt represented in this graphic with red diagonal lines is due to a 30-year fixed rate mortgage on a home that this couple owns, which is expected to be paid off by age 58.



4) PERSONAL TAX PAYMENTS Graphic

Personal Tax Payments (Real $/year by age; Includes all federal, state, and local earned income taxes, employment taxes, property taxes, and realized asset-related federal, state, and local short-term & long-term capital gains taxes and penalties.)

This PERSONAL TAXES graphic lists all projected tax payments across your lifecycle, and reflects your settings on the tax worksheet and your tax-related entries on the tax-advantaged plans and financial assets worksheets.

This PERSONAL TAXES graphic includes your projected taxes related to:

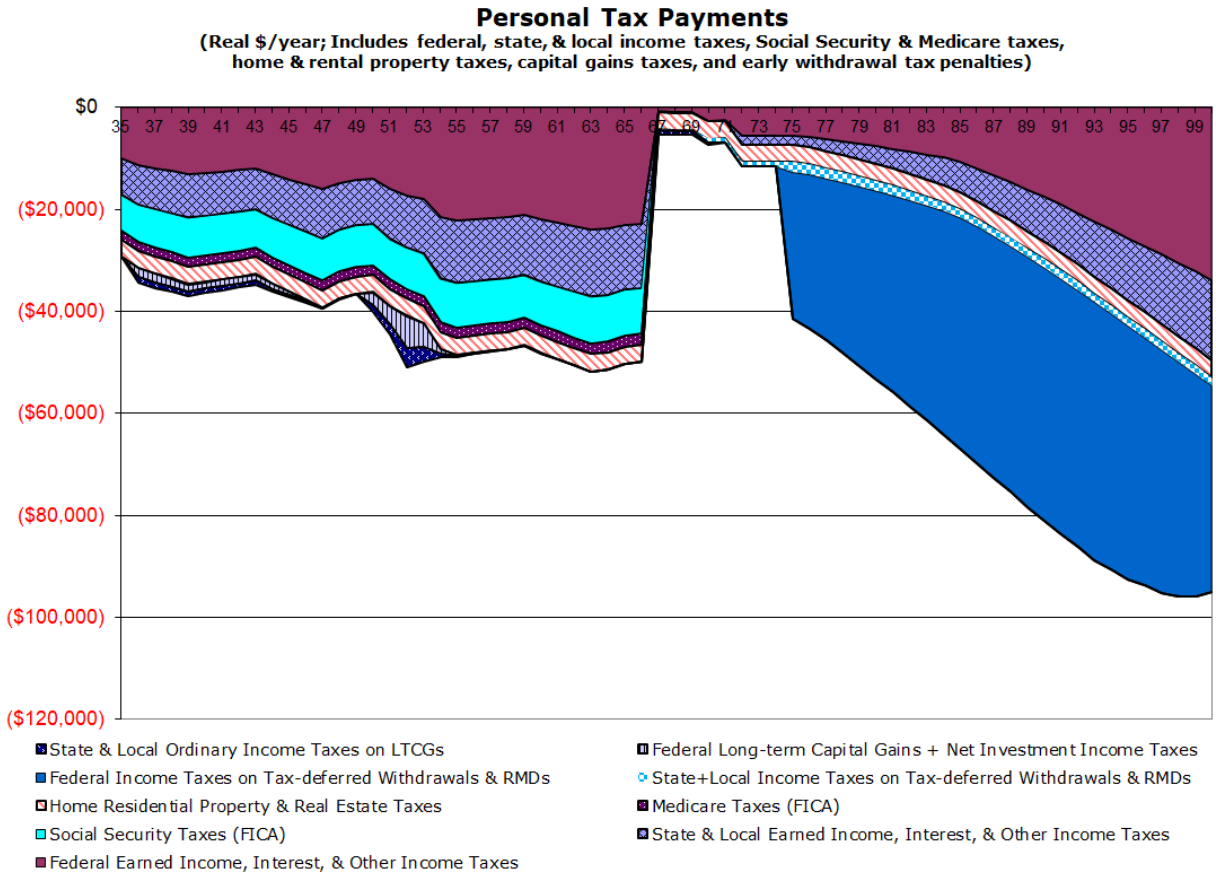
* Federal, State and Local ordinary income taxes on earned, interest, retirement and other income calculated with the marginal or flat rate taxes that apply to single or married taxpayers filing jointly

* FICA/Social Security and Medicare taxes for both salaried and self-employed workers
* Property and real estate taxes
* Ordinary Federal, State, & Local taxes on mandatory and needed tax-deferred account withdrawals
* Federal long-term capital gains taxes
* State and Local ordinary income taxes on long-term capital gains

Note that this taxes graphic also reports "realized" asset taxes related to asset withdrawals, ordinary income, and capital gains distributions, including early withdrawal penalties. Long-term capital gains are calculated at the federal tax level and assessed at ordinary rates at the state and local income tax levels. Federal, state, and local ordinary income taxes on reinvested interest are also assessed automatically.

The information that you enter on the financial assets worksheet related to taxation, including that tax basis in your various accounts, will affect your tax projections. Ordinary earned income and ordinary short-term capital gains asset income tax treatments are similar, and therefore VeriPlan combines both earned income and asset income sources here for taxation purposes. Generally, most asset income taxes will be from current interest and dividend payments on cash and bond/fixed income assets.

PERSONAL TAXES graphic example



For the sample graphic above, note several things about this couple's projected taxes. This projection assumes that this couple lives in Connecticut and works in New York City, subjecting them to New York City local income taxes, which are also supplied by VeriPlan. Additionally, this couple pays substantial Social Security payroll taxes throughout their working years. They pay more than two wage and salary employees would, because Earner #2 is self-employed and pays both the employer and employee portions of these Social Security payroll taxes, which VeriPlan assesses automatically.

In the middle of their working years, you will notice spikes related to the withdrawal of assets from traditional retirement accounts to fund some of their children's educational expenses. When this couple gets closer to paying their children's education there are steps that they could take to lower taxes related to education funding. VeriPlan acts as an early warning system, so that they can understand the short-term risk of depleting assets in taxable accounts that would not be subject to early withdrawal penalties.

Finally, note that in retirement, this couple would pay increasing taxes on withdrawals from tax-advantaged retirement plans to cover retirement living expenses and to satisfy requirements for Required Minimum distributions which also are automatically projected by VeriPlan. They can use VeriPlan's automated Roth contribution limitation tool to test whether lower or higher Roth contribution percentages could be more optimal while they work. Furthermore, they can use VeriPlan's Roth conversion tools to see whether a series of annual conversions following retirement might be a more tax cost effective way to acquire Roth retirement investment account assets.

5) RENTALS+PROPERTY: Income, expenses, debt payments, taxes, and cash flow from for rentals and other properties

Net Cash Flow from Rental Real Estate and Other Investment Properties (Excludes residential real estate; Real $/year by age)

VeriPlan's yellow-tabbed Property+Debts worksheet allows you to enter information concerning up to 10 rental properties and up to 10 other investment properties, including information about asset values, income, operating expenses, taxes, depreciation, and debt payments. In addition, it allows you to plan the future purchase and sale of rental real estate and other property assets. This graphic shows aggregate cash flows across all these assets including gross income, operating expenses, real estate taxes, and debt payments. The solid black and red lines show the annual positive and negative cash flows respectively for all of these property assets.

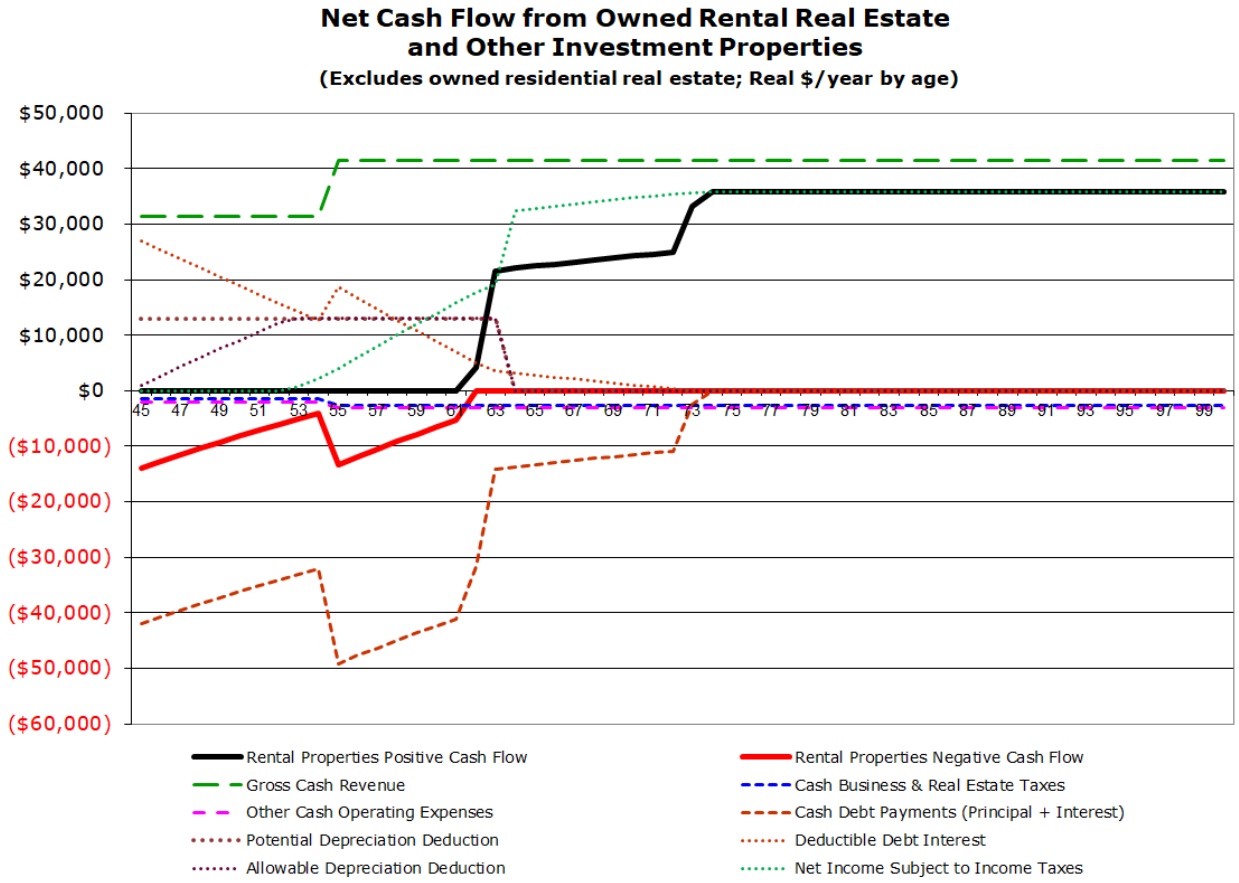
In addition to cash flow information, this graphic also presents some additional information used to project net positive or negative cash flow from rentals and other properties. Positive net cash flow less depreciation would also flow onto the personal tax return. This additional information is the interest only portion of debt payments which would be deductible and the depreciation allowance for rental real estate properties. For depreciation, two columns are provided: A) total potential depreciation and B) the amount of depreciation projected to be deductible in a particular year. Then, total taxable rental and other property income is projected for each year, as well. This taxable total income equals A) gross revenue minus the combination

of B) business and real estate taxes + other expenses + the interest only portion of debt payments + deductible depreciation.

RENTALS+PROPERTY graphic example

This graphic combines all projection factors for a rental real estate property that is owned currently and has a debt that is being paid down. Income, operating expenses, real estate taxes, and depreciation are all taken into account automatically. The net cash flow, when positive, would flow onto the personal tax return and be subject to automatic projection income taxation by VeriPlan taxation processes.

In the tenth year, a non-real estate property with accompanying debt, income, expenses, and associated property taxes is planned for purchase. VeriPlan will handles everything automatically, including the purchase economics. This purchase accounts for the cash flow trend reversing and turning more negative in the tenth year. As the debts on both of these investments are paid down, net combined cash flow turns positive at about age 62. Cash flow becomes increasingly positive after that, until it levels off at about age76, when all debts would be retired.

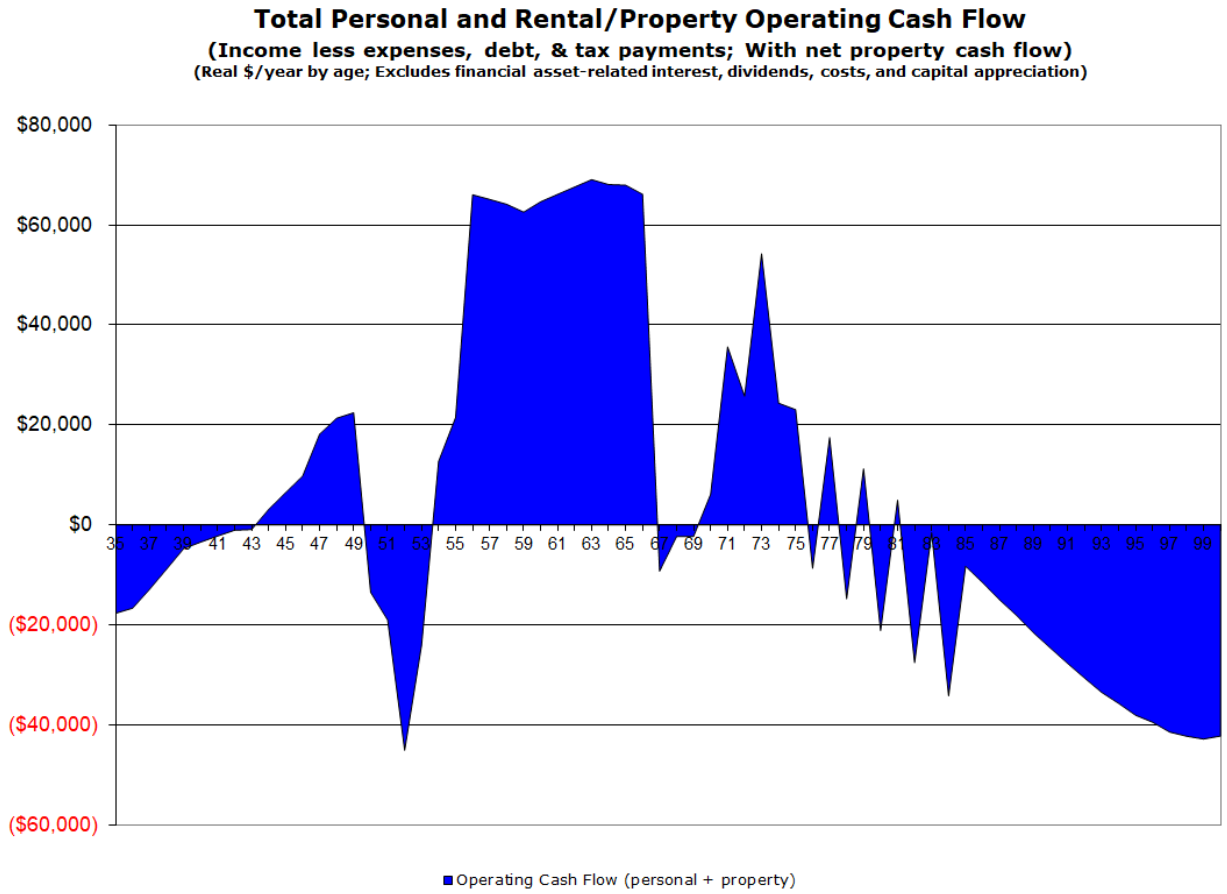


6) CASH FLOW Graphic

Non-Asset Cash Flow – Income less Expenses, Debt, & Tax Payments (Real $/year by age; Excludes asset-related interest, dividends, costs, and capital appreciation)

This CASH FLOW graphic projects your net earned and other non-asset income -- reduced by all expenses, taxes, and' debt payments. The graphic is a summary of all projected financial activity, but without any asset-related returns or appreciation net of investment costs. However, it does include the projected impact of required taxes related to assets.

CASH FLOW graphic example



For this couple, they are projected to be net savers during the earlier and later working years. For part of the period when their two children are in college, they are projected to have negative cash flow. In retirement, their projection shows an increasing cash flow gap between retirement expenses and retirement income sources, such as Social Security and pensions as they age. Therefore, they will need to draw upon investment assets to make up the difference.

This gap is primarily driven by increasing taxes related RMDs as they get older. This Operating Cash flow graphic does not include the financial asset side of overall cash flow and assets would be required to make up any negative cash flow in retirement. Note that VeriPlan adds investment asset projection information to this Cash Flow information in the "Asset Flows" graphic. (For more information, see the Asset Flows graphic section below.)

7) SAVINGS RATES Graphic

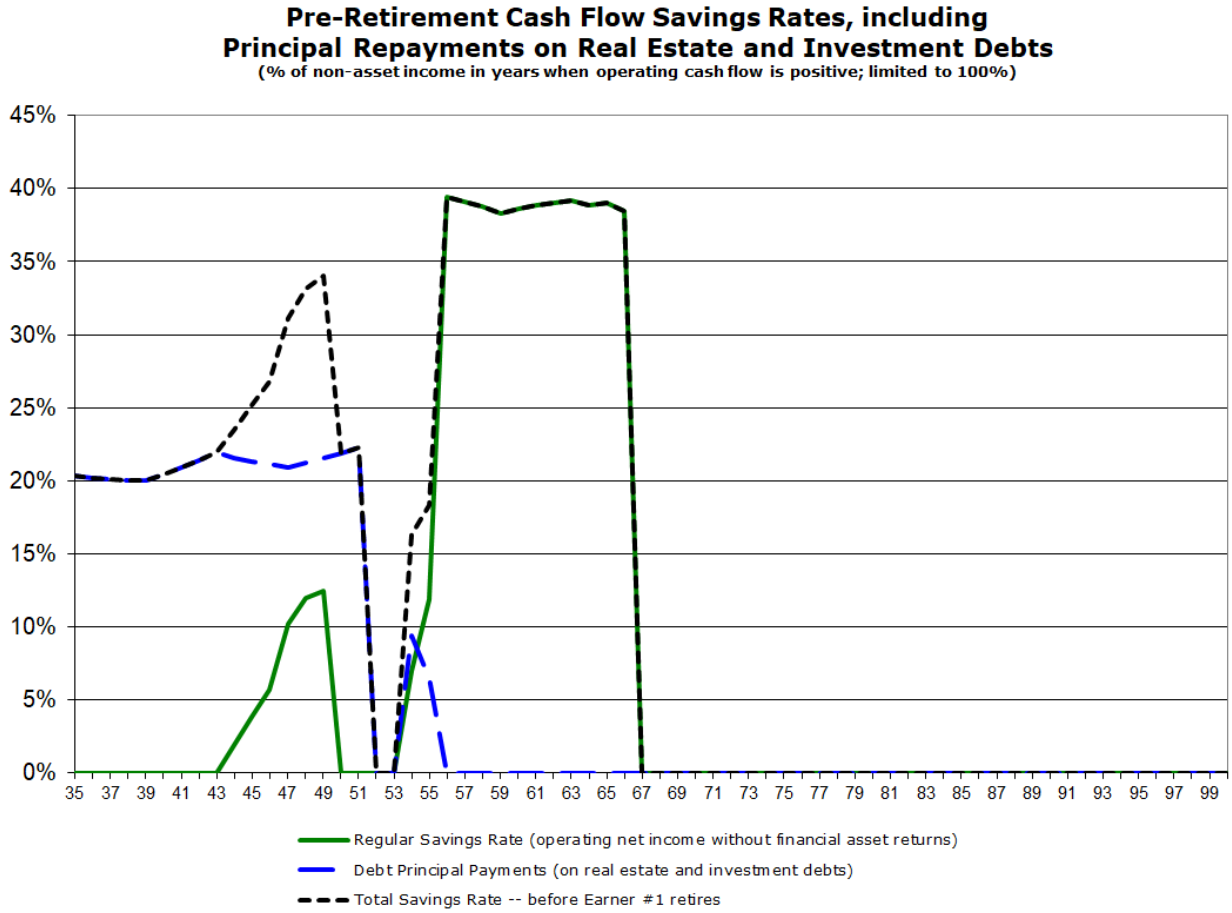
Pre-Retirement Savings Rates with Investment-Oriented Debt Repayments (%/year by age; % of non-asset income in years when non-asset cash flow is positive.)

This SAVINGS graphic projects your annual savings rates up to the planned retirement age of Earner #1. Up until retirement, saving rates will be zero for any projection year when expenses, taxes, and debt payments exceed non-asset income.

The graphic does not show savings rates in retirement, even if non-asset income is projected to exceed expenses, taxes, and debt payments in some retirement years. Because non-asset income in retirement is usually much less than pre-retirement income, this would distort pre-retirement versus post-retirement savings rates. Therefore, to understand potential savings situations during retirement, instead, you should refer to the asset flows graphic.

This graphic projects your savings rates with and without your investment-oriented debt payments. Particularly early in many people's lifetimes, it can seem difficult to save. Savings is always important, and it is useful to recognize that investment-oriented debt payments are a form of savings. When such debt has been retired, then your "normal" savings rates usually need to increase substantially to ensure that adequate assets will be accumulated prior to retirement.

SAVINGS RATES graphic example



For this couple in the sample graphic above, they are projected to have very high personal savings rates. In addition, to living within their means, and saving normally from their earned income, VeriPlan also includes the payoff of the principal on their on their mortgage as additional "investment-oriented debt savings."

8) HUMAN CAPITAL Graphic

Expected Income and Savings before Retirement (Real $ beginning balances by age; Depletion of expected future gross and net pre-retirement earned & other non-asset income)

This HUMAN CAPITAL graphic projects the cumulative remaining gross and net human capital for Earners #1 and #2 up until the retirement age of Earner #1.

Human capital is a depletable personal asset. Without substantial inherited assets, gifts, or lottery winnings, human capital is the only asset one has. It must be converted into earned

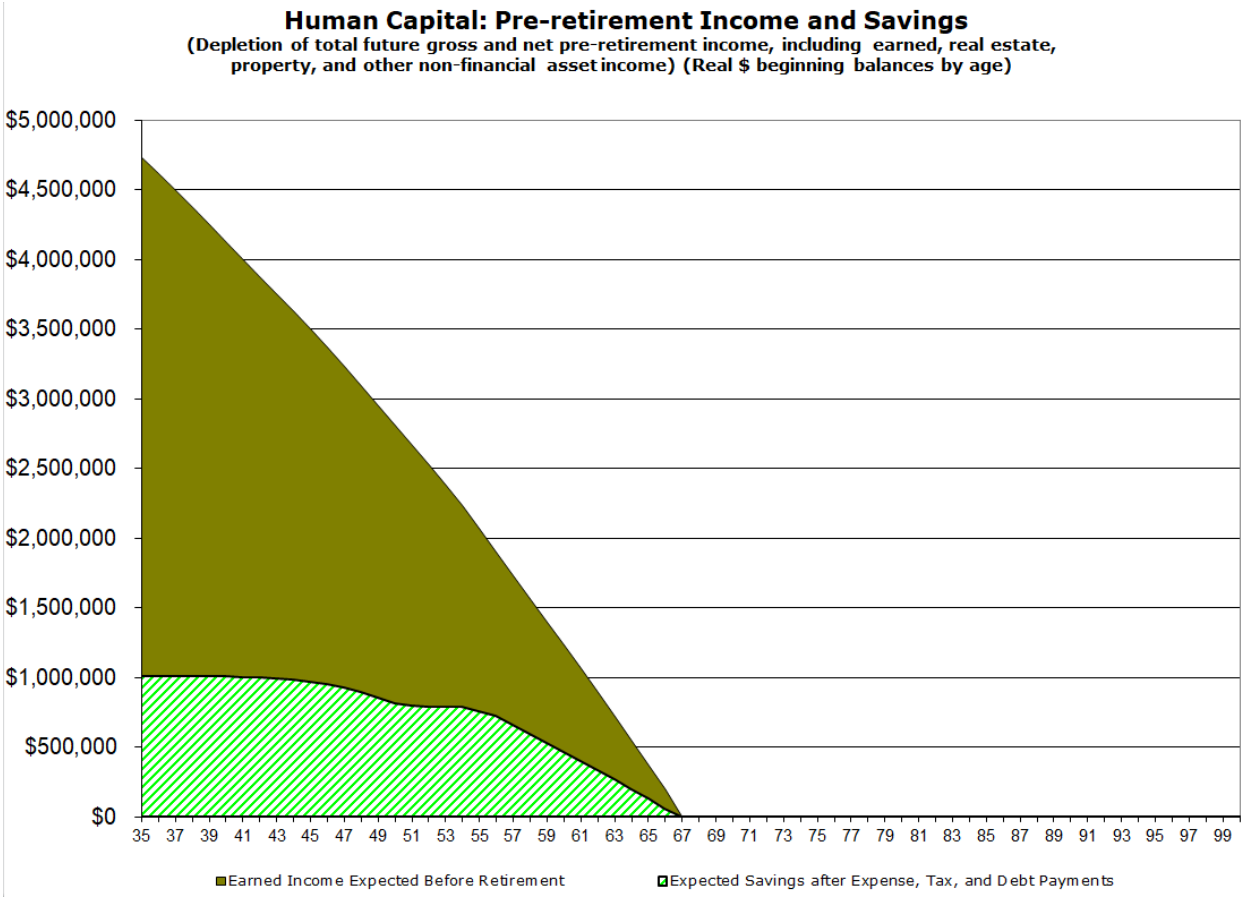
income to pay ongoing expenses. Some of it must also be saved and converted into valuable assets, if one is to have assets to live on after human capital is gone.

VeriPlan measures your gross human capital as your cumulative yet-to-be-earned real dollar income prior to retirement. Your gross human capital depends upon your entries and growth rates on the income worksheet. These entries are related to your: A) wage and salary income, B) actively-managed business income, and C) other income sources, which may or may not be associated with active income generating efforts on your part.

You can spend and/or save your gross human capital. To the extent that you save it rather than spend it, you will have projected net human capital. Your projected net human capital is your cumulative yet-to-be-saved real dollar net earned income or savings after expenses prior to retirement. Your net human capital can be converted into other assets, which can increase in value and be withdrawn in the future to fund expense shortfalls.

On other asset related graphics, VeriPlan will display your net human capital to illustrate the projected depletion of your human resources. As you move toward retirement and as you convert net income into other assets via savings and new investment deposits, net human capital must fall. The current balance of your net human capital is not a bankable or spendable asset, but you can increase or shrink it through your projected savings rate. Both your gross and net human capital illustrate the aggregate future value of your labor related earned income stream. Human capital is another way to measure future income that could also be at risk due to other factors such as unemployment, underemployment, early disability, and/or premature death.

HUMAN CAPITAL graphic example



This couple's lifetime cumulative gross earnings are expected to exceed $4,500,000 and they are projected to spend about $3,500,000 of that for ongoing expenses, debt payments, and taxes during their working years. The good news is that this couple is projected cumulatively to save about $1,000,000 of their gross projected income, which they will put toward their investment program.

On the Human Capital graphic their cumulative expected net savings are represented by the area with the diagonal green lines. On all of VeriPlan's other area graphs that project this couple's lifetime investment assets, you will notice that his Net Human Capital will also be included. This is done to illustrate the conversion over time of their valuable labor into valuable investment assets.

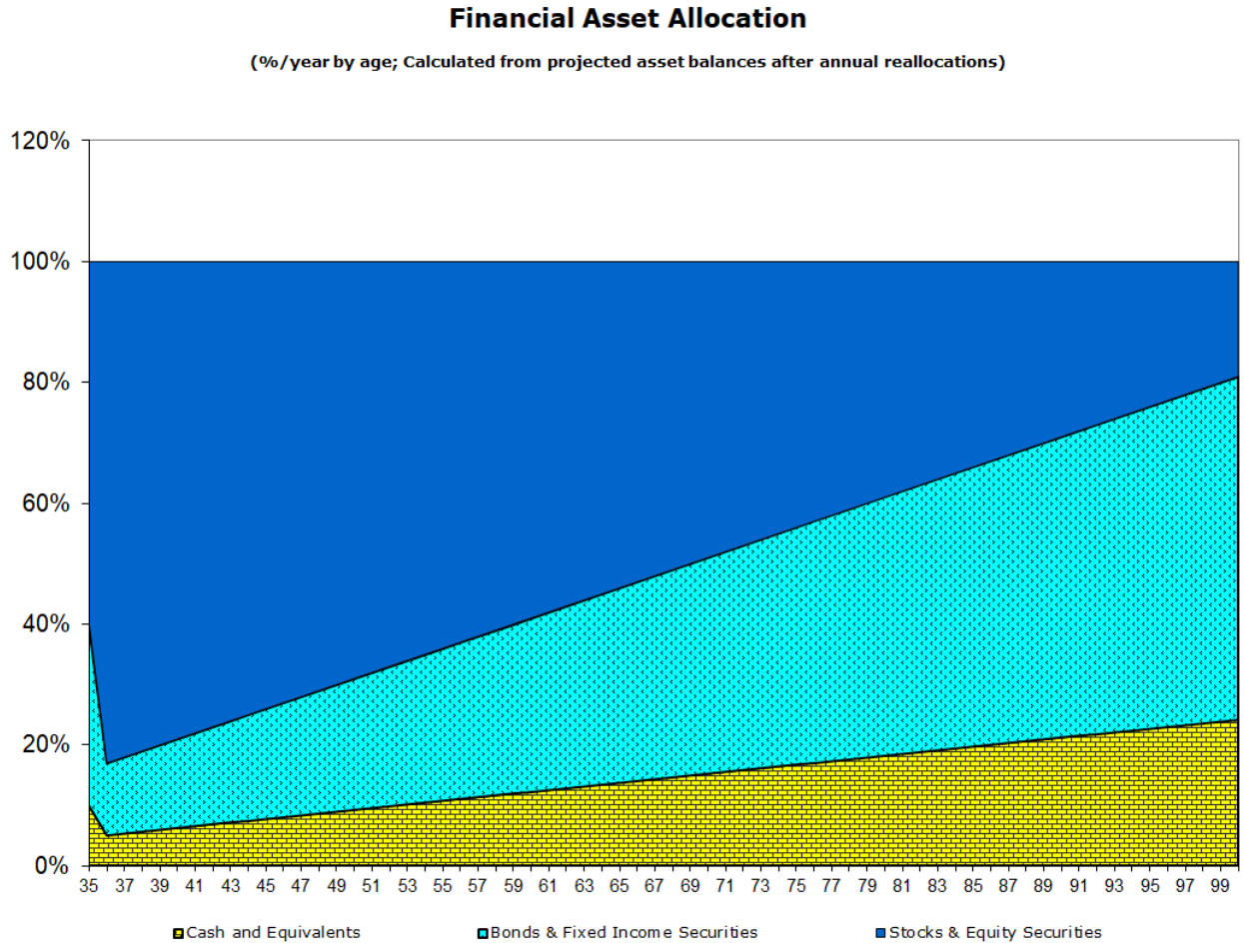
9) ALLOCATION Graphic

Financial Asset Allocation

(%/year by age; Calculated from projected asset balances after annual reallocations)

This Asset Allocation graphic shows your projected annual financial asset allocation across your lifetime. This graphic depends upon your settings on the allocation worksheet. VeriPlan provides five asset allocation methods with flexible user adjustments.

ALLOCATION graphic example



In this sample graphic, this couple has chosen to adopt an asset allocation strategy more weighted toward equities while they are younger. Over time, they will steadily increase their allocation to bonds and cash and decrease their allocation to equities. In this particular projection, this couple has chosen the VeriPlan asset allocation method that set a fixed ratio between bond and cash.

10) TOTAL ASSETS Graphic

Financial Assets, Property, and Debts with Cumulative Assets Lost to Excessive Investment Costs (Real $/year by age; Beginning balances with reallocations; Debt causes assets to display below 0)

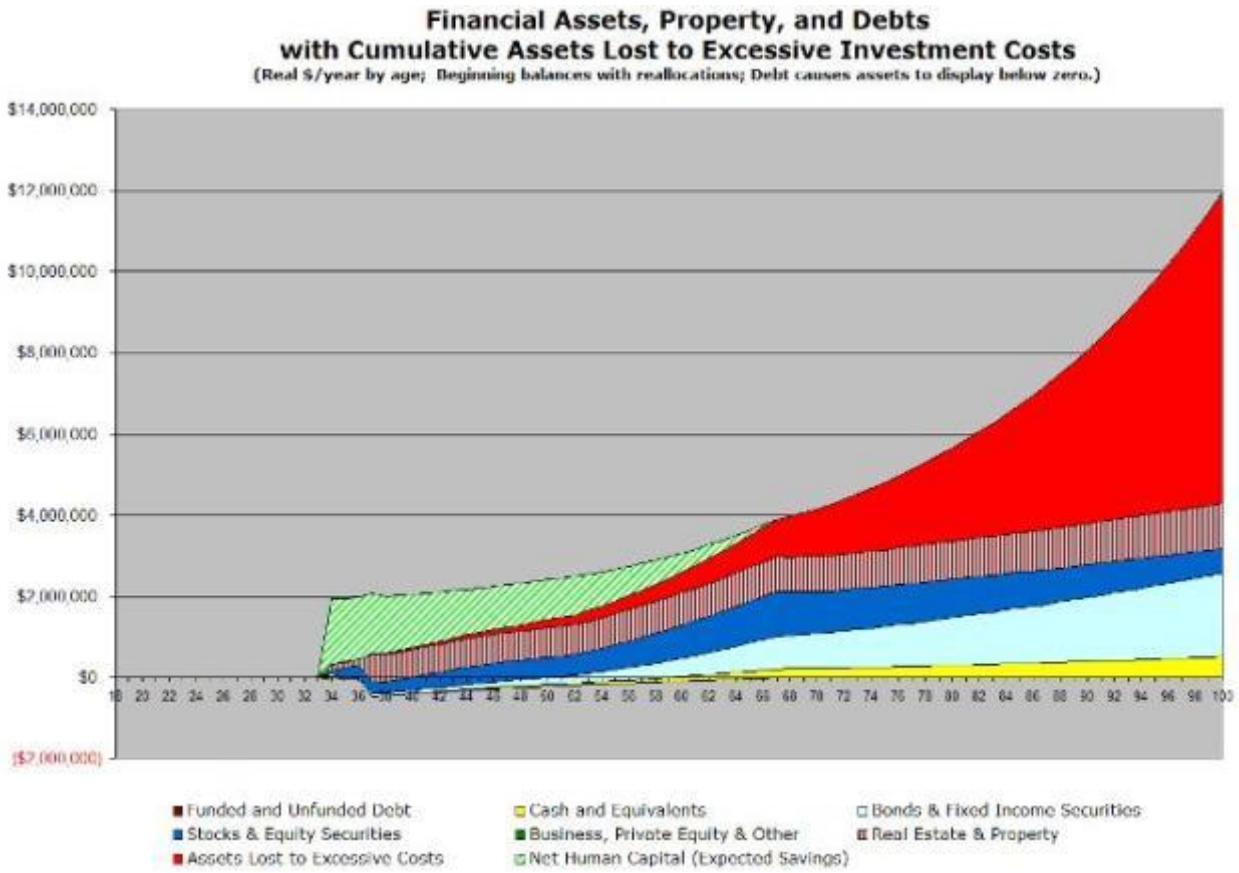
This TOTAL ASSETS graphic shows your projected cash, bond/fixed income, and stock/equity financial assets and property. Your net human capital is also shown to illustrate the conversion of your net earned income into financial assets through your savings. Cash, bond/fixed income, and stock/equity financial assets and property assets are graphed in layers. On top of your financial assets, this graphic also displays the projected values of your property and other assets that you entered on the property worksheet.

Debts display differently. This graphic includes the value of your current debts, as they are paid down, plus any future debts that you accrue. Because of how the graphics drawing facilities of the underlying spreadsheet engine work, your debts will not display directly when you have other positively valued assets. However, your current and future debts will affect how your positively valued assets are displayed.

The presence of your current or future debts can be detected easily on these graphics. Whenever the lower edge of any positively valued asset falls below zero, your outstanding debts are the cause. How much your positively valued assets will be pulled downward depends upon the total principal amount of your debts with any accrued interest.

TOTAL ASSETS graphic example

(This is the older style of this VeriPlan graphic. Because it represents the projection scenario with investment costs that is described in the accompanying text below, this older graphic has been retained.)



Graphing investment cost inefficiencies in the Total Assets graphic

In this sample total assets graphic, this couple's lifetime asset projection indicates that they would have increasing amounts of cash, bond, and stock financial assets and real estate property over their lives. However, due to the various costs of their investment portfolio, they would spend their lives paying unnecessarily high investment expenses. In effect, they would throw away almost as much in total assets by age 100 than they would have retained.

VeriPlan provides easy to use investment cost analysis facilities that help users understand the lifetime impact of the investment fees they pay. The sad thing is that this couple's lifetime projection graphic reflects the average investment costs paid by the average investor. Like other average investors, if they do not slash their investment costs, they will significantly stunt the growth of their retirement portfolio by paying excessive fees to the financial services industry.

In addition to projecting your cumulative cash, bond, and stock financial assets and property assets, this TOTAL ASSETS graphic also projects your cumulative assets lost to excessive

investment costs associated with your financial assets and your settings on the investment costs worksheet.

Your property and other assets are graphed with your financial assets and cost-inefficiencies and have been arranged on these charts to demonstrate how long your total assets are projected to last. If you are projected to have expense shortfalls that will reduce your assets in the future, then your more liquid financial cash, bond/fixed income, and stock/equity assets will be depleted first. After they are exhausted, VeriPlan assumes you will deplete your other assets (business interests, private equity, etc.) followed thereafter by your real estate property assets.

11) ASSET FLOWS Graphic

Non-Asset Cash Flow with Cash, Bond, and Stock Financial Asset Returns (Includes Required Minimum Distributions, & Unfunded Consumption) (Real $/year by age)

The graphic provides several summary financial projections. First, it graphs both annual financial asset returns net of current year investment expenses. Second it graphs your total annual cash flow from non-asset related activities, including all earned and other income, living expenses, debt payments and taxes -- including investment taxes. (This line is equivalent to the CASH FLOW graphic.) Then, it graphs the combination of your projected non-asset cash flow and current year net asset appreciation.

This ASSET FLOWS graphic also indicates total projections annual Required Minimum Distributions (RMDs) from traditional tax-advantaged retirement accounts. Finally, it graphs unfunded consumption expenses, if and when projected cash, bond, and stock financial assets are exhausted. These unfunded consumptions expenses would need to be paid through borrowing or the sale of property and other assets or they would be entirely unfunded.

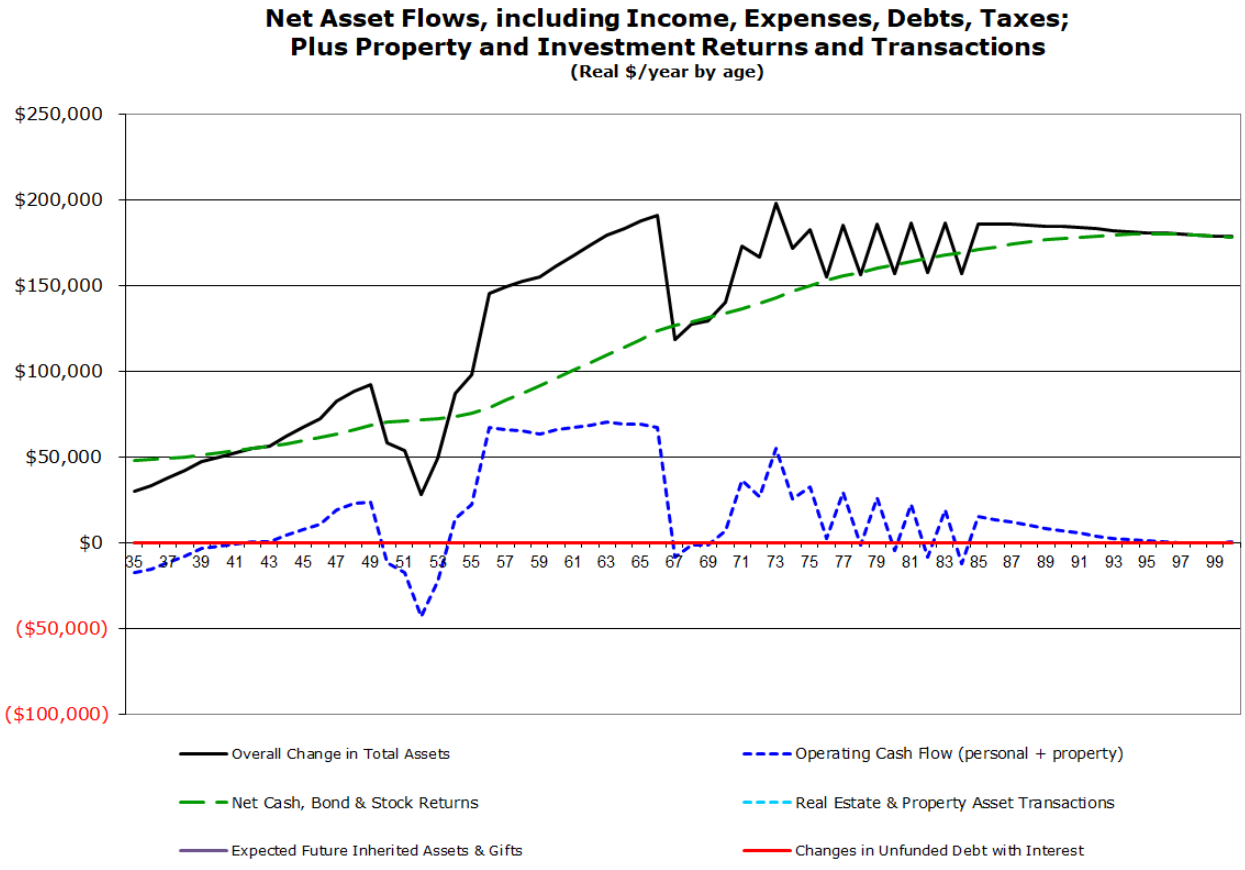
ASSET FLOWS graphic example

Some VeriPlan users find the Asset Flows graphic to be very useful, because it combines the effects of lifetime cash flow from earnings, expenses, debts, and taxes with the effects of lifetime appreciation of their cash, bond, and stock financial asset portfolio. In this sample graphic, this couple’s projection data from their Cash Flow graphic is drawn as the blue line. The projected annual return on their investment portfolio is graphed as the green line, which steadily increases

during their working years. During their retirement years, the projected annual return on their investment portfolio levels off but still grows moderately, as they utilize some of their investment returns to fund their negative cash flow in retirement.

The black line on the Asset Flows graphic combines this couple's cash flow from earnings, expenses, debts, and taxes with the appreciation of their cash, bond, and stock financial asset portfolio. Whenever that black line is above zero, then their total family assets are projected to increase by that annual amount. Correspondingly, when the black line falls below zero, this would mean that their cash flow gap exceeds the projected investment return of their financial asset portfolio.

(This is the older style of this VeriPlan graphic. Because it represents the projection described in the accompanying text, it has been retained.)



Required Minimum Distributions from tax-advantaged retirement accounts

After age 73, tax laws specify that a portion of the assets held in traditional tax-advantaged IRAs and employer sponsored retirement plans must be withdrawn as Required Minimum Distributions (RMDs). The initial age for RMDs used to be 70.5. This was increased to 72 by the SECURE Act of 2019. Then, the SECURE Act ("2.0") of 2022 increased the initial age for RMDs to 73 and to 75 starting in 2033. Thus, currently the initial age for RMDs depends upon your age now.

Calculated according to actuarial tables, RMDs force assets out of traditional tax-advantaged accounts and into taxable accounts solely to assess income taxes on the taxable proceeds (above any tax basis that these retirement account assets might have, which is usually quite small or zero). For user convenience, this graphic also lists this couple's projected Required Minimum Distributions from traditional tax-advantaged retirement accounts. However, users should understand that RMDs are not retirement "income," but are simply legally mandated withdrawals from tax-advantaged accounts to create "income taxable" events and corresponding income tax payments. RMDs occur whether or not the retiree(s) need the after-tax funds to live on in retirement. If they do, then RMDs can fund negative cash flow. If they do not, then the after-tax funds are simply reinvested in taxable accounts. The Withdrawals graphic, immediately following, discusses RMDs in greater detail.

12) DEBT OWED Graphic: Personal, real estate, and business debt principal owed

DEBT OWED graphic example

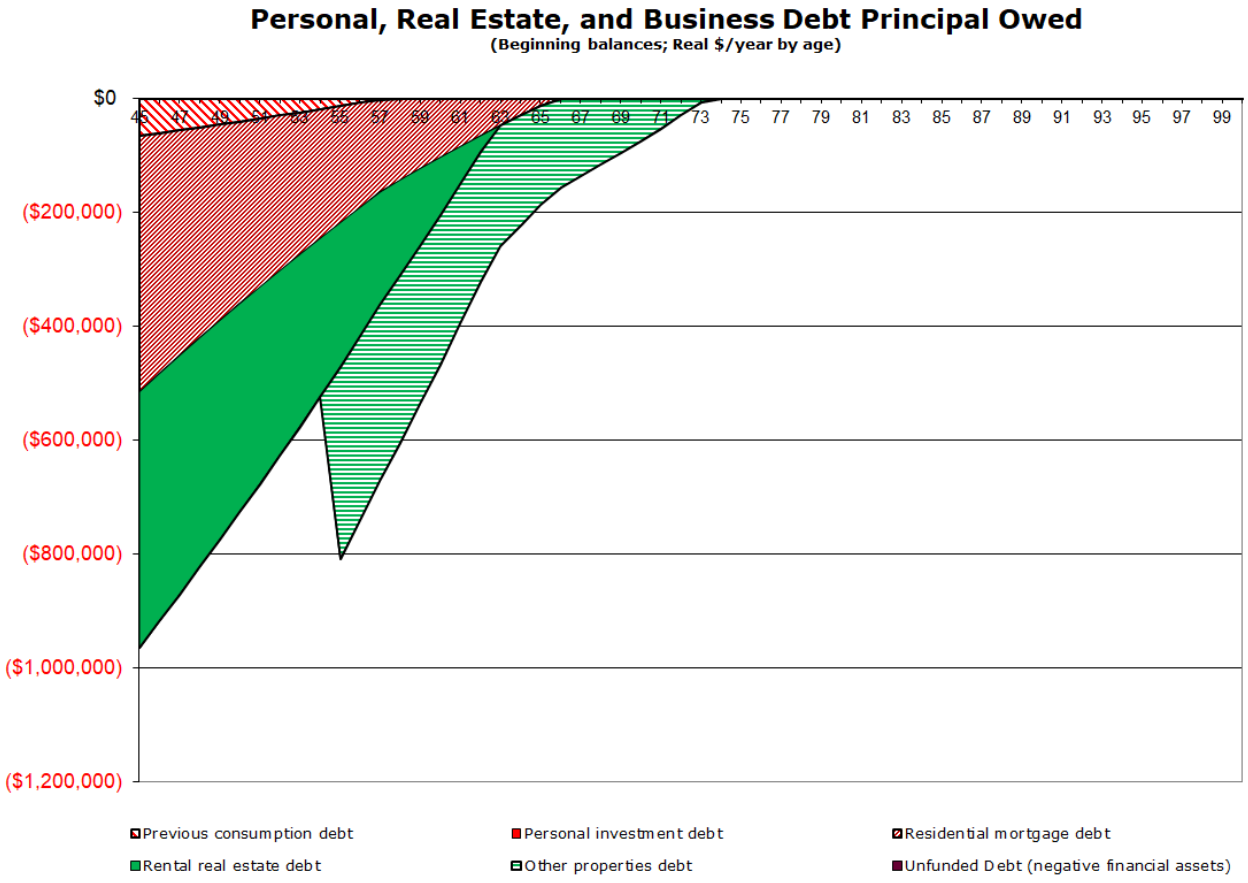
This Debt Owed provides projected annual beginning principal balances for all personal and business debts. Debts are categorized as:

a) previous consumption debt,
b) personal investment debt,
c) residential mortgage debt,
d) rental real estate debt,
e) other properties debt, and
f) unfunded debt.

Unfunded debt is equal to cumulative negative financial assets, if financial assets are projected to be depleted.

In the graphic example below, there are three current debts that are all projected to be paid off by age 66. The smaller wedge at the top is credit card debt related to prior consumption, The light red area is the mortgage on the personal residence. The dark green wedge is the mortgage debt on the rental real estate property that is currently held.

The fourth debt represented by the lighter green area with horizontal lines has not yet been incurred. In ten years, they plan to purchase a small business property, which will involve taking on more debt. VeriPlan handles all the financial parameters of future purchase and/or sale of any business property, as well, as for residential real estate and rental real estate.

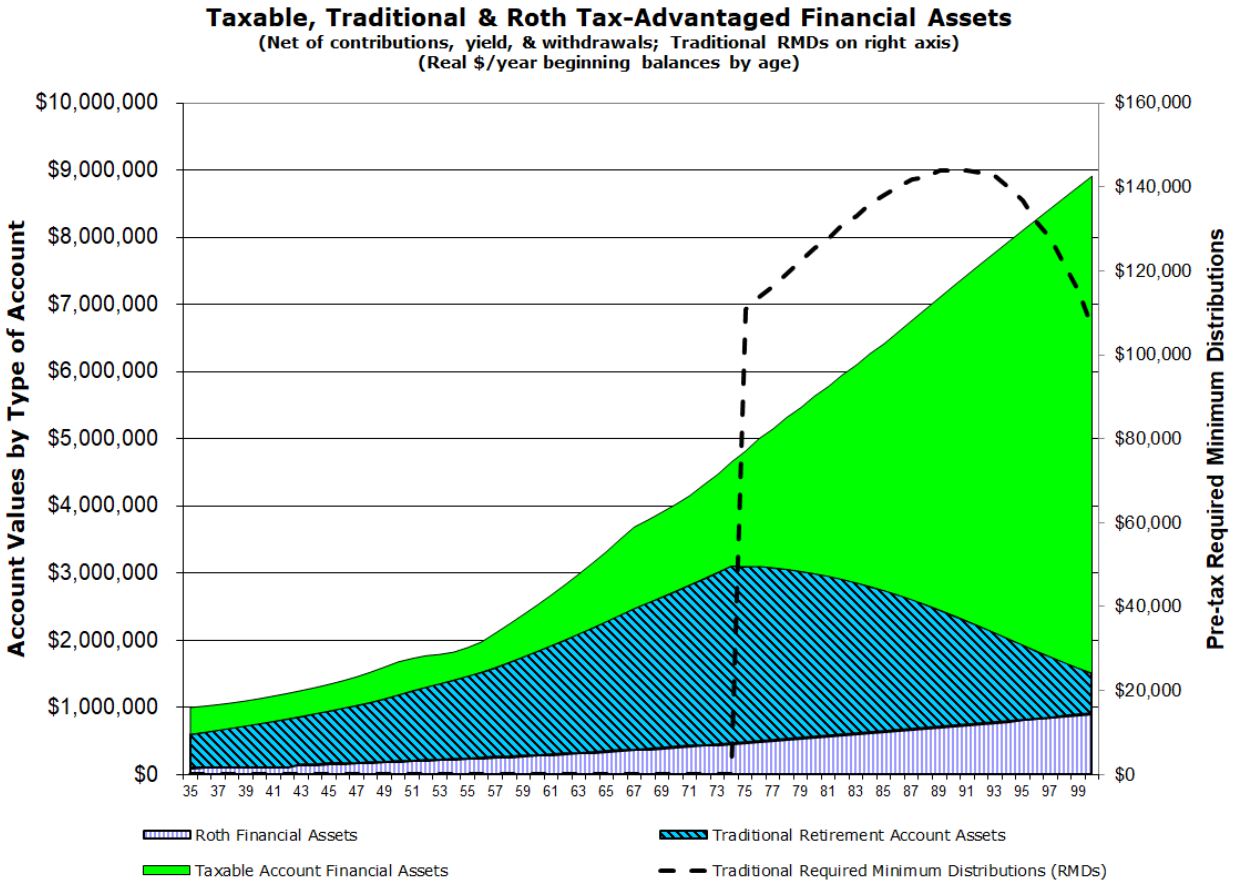


13) ASSET TAXABILITY Graphic

Taxable, Traditional & Roth Tax-Advantaged Financial Assets (Real $/year beginning balances by age; Net of new investments, yields, transfers, and withdrawals)

This ASSET TAXABILITY graphic projects your holdings of financial assets between your taxable and tax-deferred accounts. These assets depend upon the tax characteristics your current holdings, which you entered on the financial assets worksheet. This graphic also depends upon your settings on the tax-advantaged plans worksheet regarding your future contributions into tax-advantaged retirement plans.

ASSET TAXABILITY graphic example



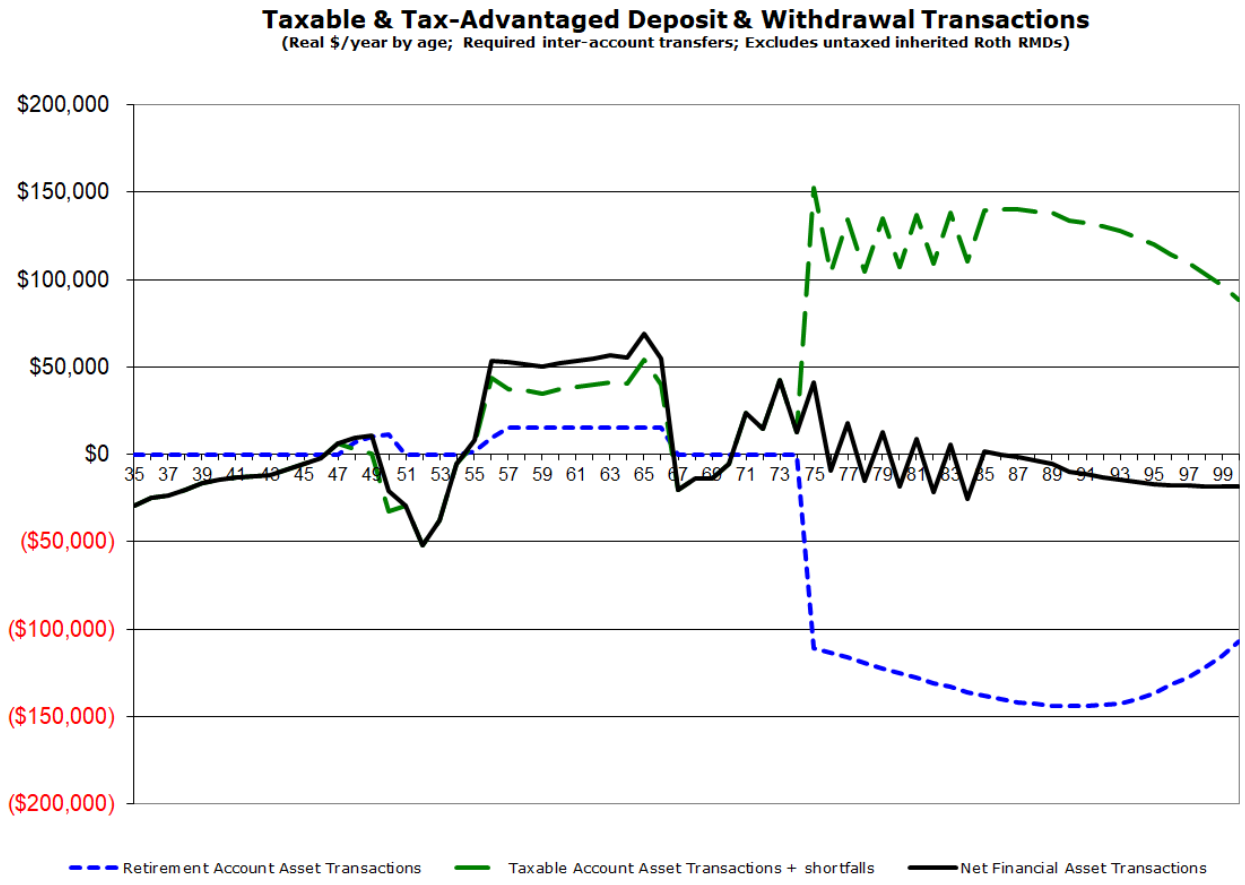
The Asset Taxability graphic for this couple indicates that their modest contributions to Roth retirement accounts would grow steadily. Concerning their traditional tax-advantaged accounts those assets would grow and then decline in retirement with RMDs. Throughout their working years this couple plans to take maximum advantage of tax-advantaged retirement investing. This means that they need to keep an eye on their ongoing contributions to deal with years where assets in taxable accounts would not fund near term expense needs.

14) ASSET TRANSACTIONS Graphic

Taxable & Tax-Advantaged Deposit & Withdrawal Transactions (Real $/year by age; Required inter-account transfers)

This TRANSACTIONS graphic shows your projected annual net financial asset cash flows into and out of both your taxable and tax-advantaged accounts. It also shows your net overall financial asset transactions, which is a combination of your taxable and tax-advantaged accounts transactions. This combined annual transaction line indicates whether you are adding to or withdrawing from your financial asset accounts to meet your expense, debt, and tax obligations. Annual costs without interest that cannot be funded with financial assets are also included in the taxable and net asset categories.

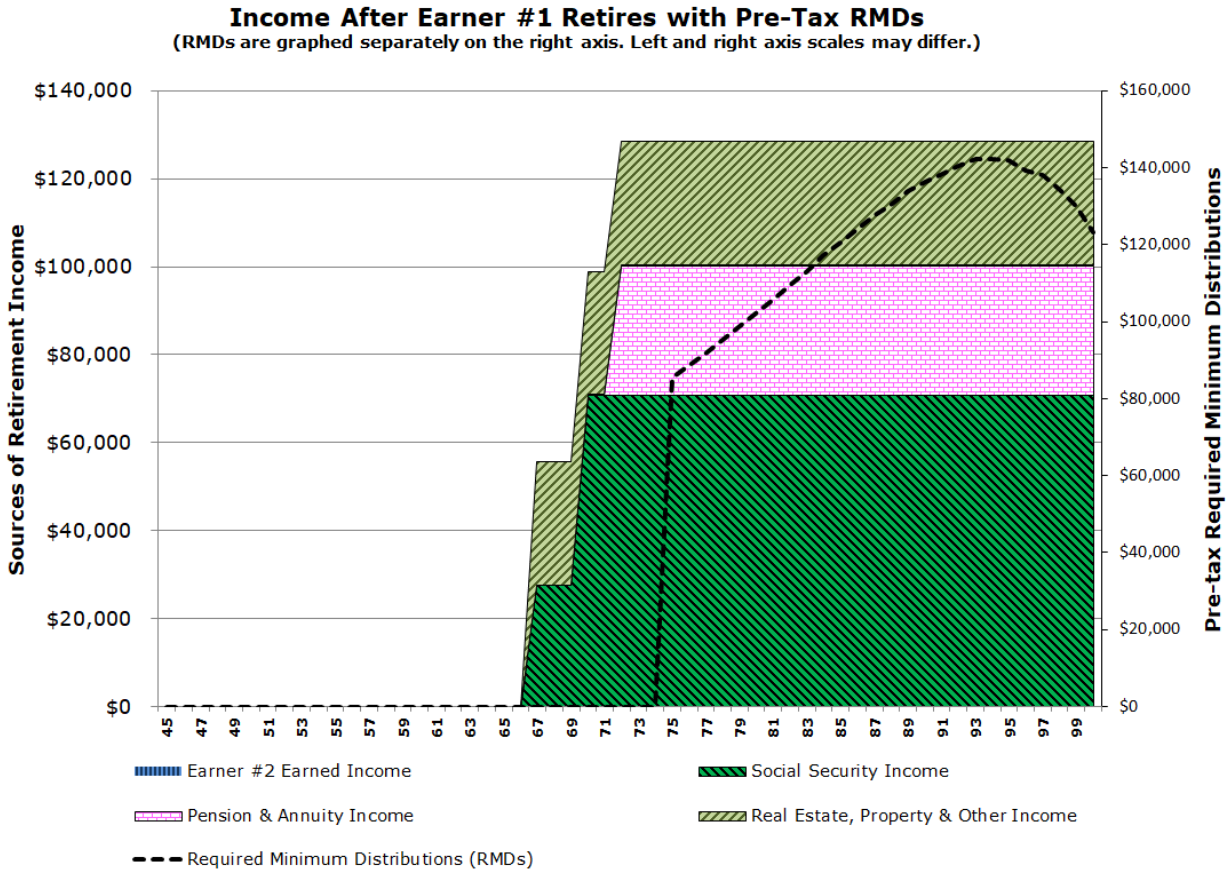
TRANSACTIONS graphic example



This graphic is helpful when you wish to assess whether withdrawals from tax-advantaged accounts are being made to cover necessary expenses and/or to meet mandatory tax recognition and taxation requirements for RMDs. If tax-advantaged account withdrawals are indicated simultaneously with deposits into taxable accounts, then some or all of your tax-advantaged account withdrawals are being made to satisfy mandatory withdrawal rules. This graphic focuses on transactional cash flows only. It does not show your overall projected net financial asset yields. All your financial asset deposits, distributions, and other withdrawals are included. However, capital appreciation that is not recognized for tax purposes is not. Instead, capital appreciation that does not involve taxation is simply reinvested and is reflected in your financial asset balances on VeriPlan's various financial assets graphics.

15) RETIREMENT INCOME Graphic: Retirement income sources and pre-tax Required Minimum Distributions (RMDs) after Earner #1 retires

RETIREMENT INCOME graphic example



This graphic projects various income sources in retirement after Earner #1 plans to retire. Retirement income sources may include continuing earned income from Earner #1, Social Security retirement income, and pension, deferred compensation, and/or annuity income.

This graphic also includes Pre-Tax Required Minimum Distributions (RMDs). RMDs are not strictly an income source. Instead, they are required distributions of invested assets from retirement accounts that force taxation in the process. If you would need some or all of the after-tax RMD proceeds to pay your bills, then you can think of them as income. Whatever might be left of these RMDs after taxes and after expenses would then be deposited into taxable asset accounts.

Pre-tax RMDs from traditional retirement accounts are projected as a dashed overlay line measured by the right vertical axis. Note the retirement income sources on the left vertical axis and RMDs on the right vertical axes are usually not the same numerical scale. Also, note that if any RMDs are indicated before age 73, these could be associated with inherited traditional retirement accounts. Alternatively, if the Earner #2 spouse is older than Earner #1, they could represent RMDs associated with the spouse's traditional retirement accounts.

RMDs are not strictly an income source. Instead, they are required distributions of invested asset from retirement accounts that force taxation in the process. If you would need some or all of the after-tax RMD proceeds to pay your bills, then you can think of them as income. Whatever might be left of these RMDs after taxes and after expenses would then be deposited into taxable asset accounts.

16) ASSET WITHDRAWALS Graphic

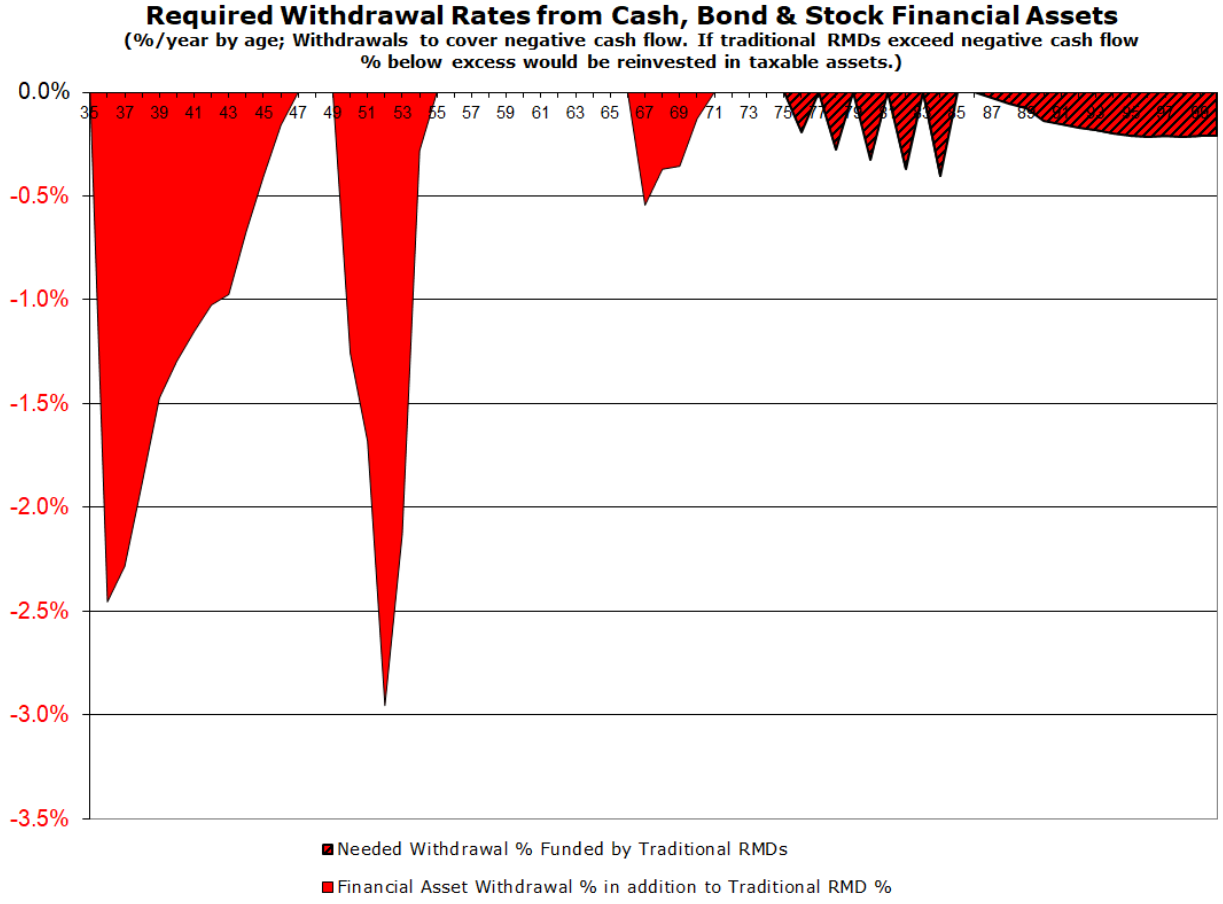
Withdrawal Rates from Cash, Bond & Stock Financial Assets (%/year by age; Withdrawals for net cash flow shortfalls, RMDs, & associated taxes)

This WITHDRAWALS graphic presents your net overall annual financial asset withdrawal rates as a percentage of the beginning balances of your then current financial asset holdings. An asset withdrawal rate can only be shown, when your total cash, fixed income, and equity financial assets are positive.

This graphic also indicates how much of withdrawals are attributable to annual Required Minimum Distributions (RMDs) from traditional tax-advantaged retirement accounts. In any projection year when negative cash flow requirements exceed RMDs, additional withdrawals will be indicated. In years when RMDs exceed cash flow requirements, then any excess RMD withdrawal beyond cash flow requirements with not be shown here. Instead, that RMD excess will be deposited automatically in taxable financial asset accounts.

WITHDRAWALS graphic example

While those planning retirement seek rules of thumb about asset withdrawal rates, the future unfolds unpredictably and withdrawals over a lifetime will depend upon the net effects of a myriad of financial factors. Retirement withdrawal studies that discuss methods of gauging and planning safe withdrawals of 3%, 4%, or even higher percentages from retirement portfolios have utility and are very important to consider.



For this couple, their withdrawals graphic provides information about a variety of projected events over their lives that would involve withdrawals of assets from their cash, bond, and stock financial asset portfolio – exceeding the projected yield of their financial portfolio at that point in time. The first percentage drawdown occurs early in their projection, when their portfolio is the most modest and when they need to cover negative cash flow from financial assets that they were fortunate enough to have inherited. The second drawdown occurs during some of the consecutive years when their two children are in college. The third drawdown occurs in their early retirement years when that have a larger cash flow gap, because they have chosen to increase their Social Security retirement payments by delaying acceptance of their first payment until they are age 70.

Finally, the fourth and longest drawdown event begins around age 75 for Earner #1, which illustrates the projected amount they need to withdraw to fund negative cash flow once they have begun to receive Social Security retirement payments and are also subject to Required Minimum Distributions. The good news for them is that VeriPlan projects their withdrawal rates would be less than half of one percent in late retirement. This is fortunate, because their shift to a bond and cash heavy investment portfolio as they age would mean both lower expected risk but also lower expected rates of return.

17) RETIREMENT SHORTFALLS Graphic: Cash flow shortfalls after Earner #1 retires including RMDs

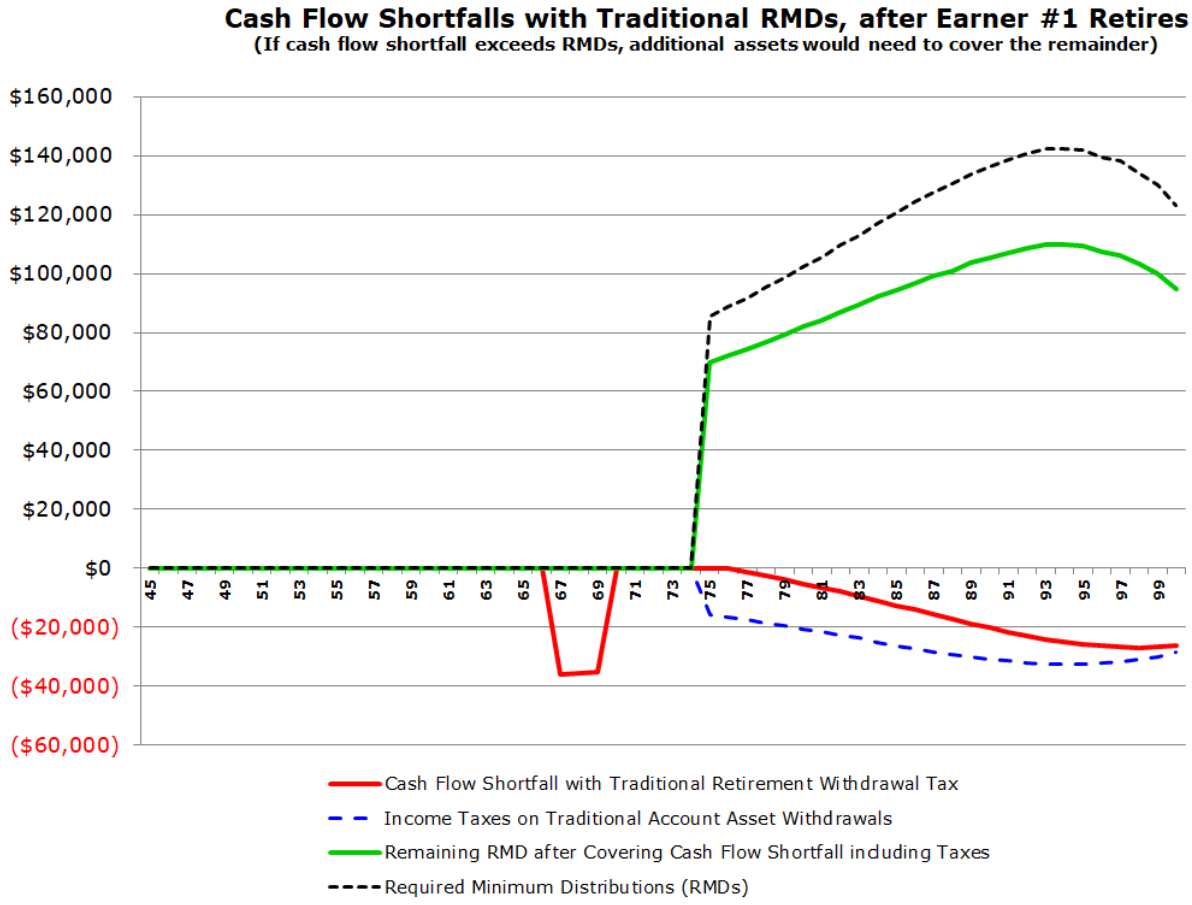
RETIREMENT SHORTFALLS graphic example

This graphic projects any yearly cash flow shortfalls after Earner #1 retires. These cash flow shortfalls have already taken into account the retirement income sources projected on the previous RETIREMENT INCOME graphic. However, the cash flow shortfall line does not include the impact of your projected RMDs from traditional retirement accounts.

RETIREMENT SHORTFALLS demonstrates whether your RMDs are projected to be sufficient to make up for any cash flow shortfall that you might experience during various retirement years. If the cash flow shortfall in any projection year, which includes income taxes on traditional account asset withdrawals, were to exceed your projected RMDs, then other assets would be needed to cover the remaining shortfall.

To provide a better understanding of traditional retirement account RMDs and taxes, this graphic also includes a dashed line indicating total federal, state, and local ordinary income taxes on withdrawals from traditional retirement accounts to cover RMDs and for income taxes on any additional withdrawals needed in excess of RMDs.

This graphic displays a continuous green line that indicates any net RMD remaining after RMD income taxes and cash flow shortfalls have been covered. When this line is positive, this means that these excess RMD assets would be automatically reinvested in your taxable accounts as financial assets.



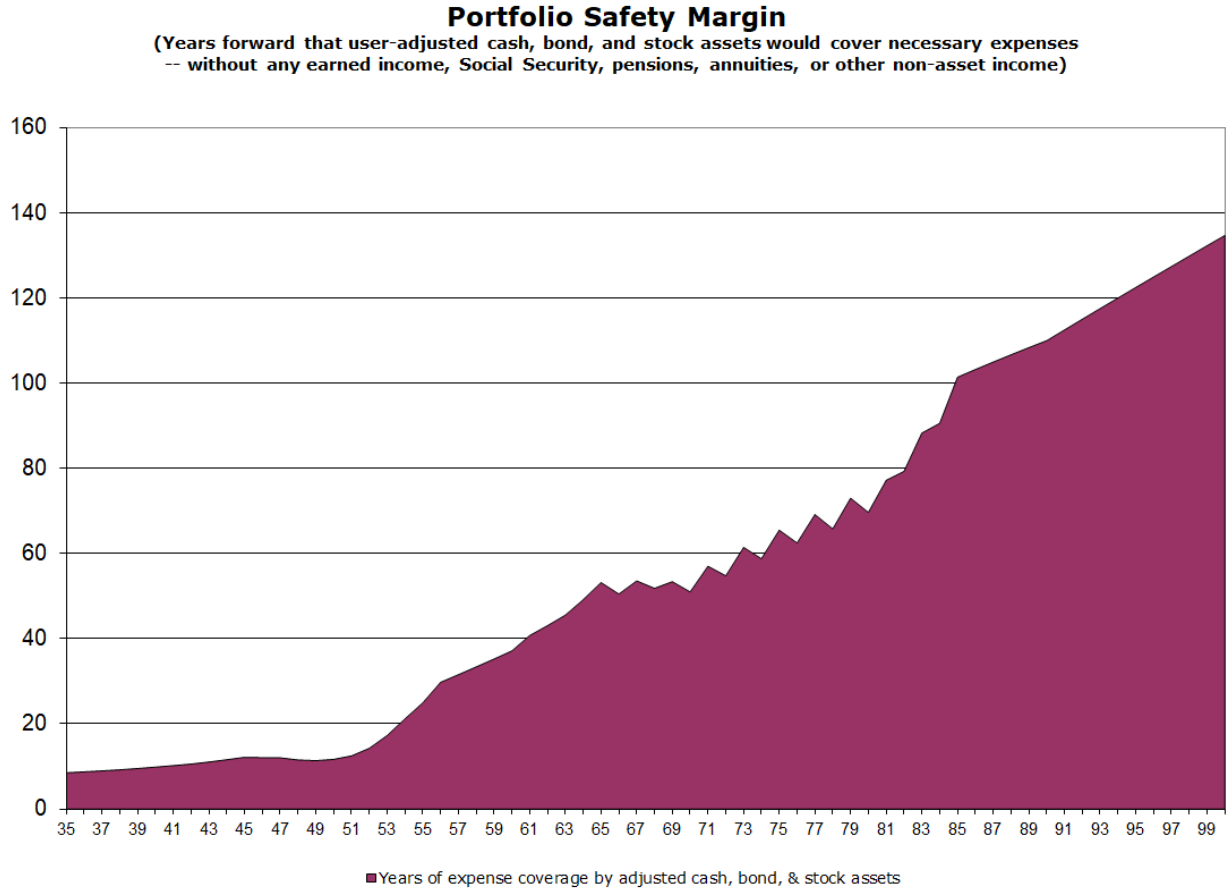
18) ASSET SAFETY MARGIN Graphic

Emergency asset coverage of expenses without other income (Number of years forward from any projection year that financial assets would cover necessary expenses -- without

the receipt of other expected earned income, Social Security, pensions, annuities, or other non-asset income)

This SAFETY MARGIN graphic provides a measure of how long, measured in years going forward, that your projected financial assets would cover your projected necessary expenses, if you lost all your expected sources of income. In effect, this is a stress test of the unusual situation where all personal income sources ceased, and you needed to fund needed living expenses solely from your financial investment assets.

SAFETY MARGIN graphic example



Particularly after this couple puts their two children through college (by the time that Earner #1 is in his or her early 50's), their portfolio safety margin keeps increasing. Some of this is due to aggregate long-term portfolio appreciation, and some of this is due to the fact that they have chosen an asset allocation strategy that increasingly shifts toward bonds and cash over time.

19) VALUE OF TIME Graphic: Hourly wage equivalent value of income, expenses, and financial assets

VALUE OF TIME: Hourly Value of Income, Expenses, and Financial Assets (Number of years forward that cash, bond, and stock portfolio financial assets would cover necessary expenses -- without any expected earned income, Social Security, pensions, annuities, or other non-asset income)

Given all the uncertainties in personal financial planning, it can be very difficult to make major life decisions, such as the choice of when to retire. Viewing finances on an hourly basis can be helpful, and this is another way to think about how one must or would like to spend one's time. Regarding the retirement decision, the trade-offs between working longer versus retiring can aided by understanding income, expenses, and financial assets on a standard hourly basis.

When they are sufficient in retirement, your financial assets act as a replacement worker for yourself. Financial assets can replace earned income and close the gap between Social Security, pension, and annuity income and expenses in retirement.

While other VeriPlan graphics project financial resources assuming that the primary Earner/User(s) will live to age 100, that very conservative planning assumption clearly exceeds the average life expectancies that you can see on VeriPlan's Life Expectancy graphic. To help you think about the differential impact of an earlier demise, this graphic provides three lines measuring financial assets on an hourly basis, if death were to occur at 80, 90, or 100 years of age.

All the lines on this graphic present information on an hourly basis assuming a 2,000 full-time work year, since 8 hours per day times 5 days per week times 50 weeks per year equals 2,000 hours per year.

Because the earned income, retirement income, and expenses lines measure a single year, this is how they are calculated:

- Combined Earner #1 & #2 full-time equivalent income: Combined earned income is calculated as if that income was obtained by a single worker working 2,000 hours per year. If your total household earnings are obtained with more or less than 2,000 hours of work, make a mental adjustment, but keep in mind that it is

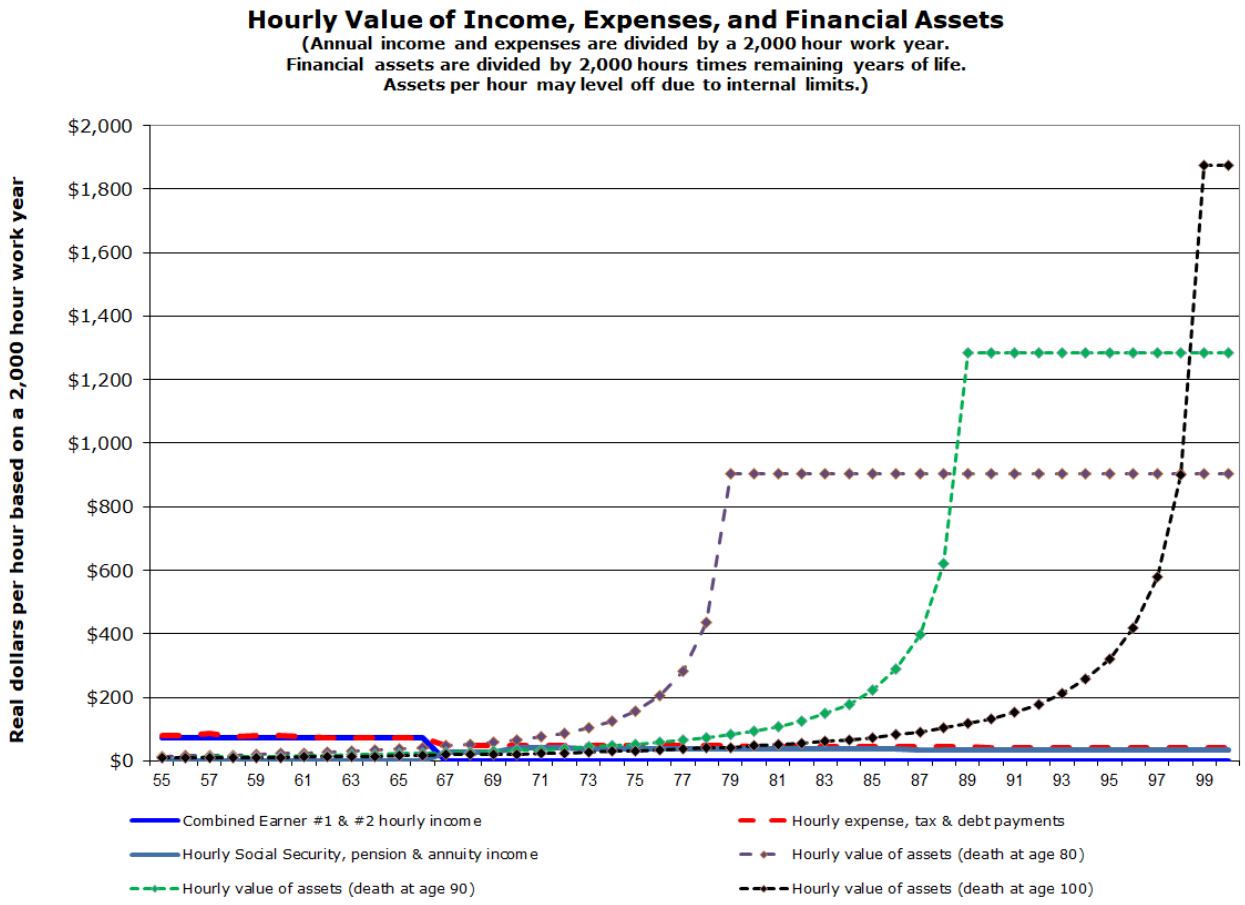
necessary to standardize the hours per year for comparisons across the various lines.

- Social Security, pension, and annuity income: All retirement income sources are combined and then divided by 2,000 hours.
- Total expense, tax, & debt payments: All cash outflows are combined and then divided by 2,000 hours.

The three "Hourly value of assets" lines with projected death at age 80, 90, or 100 measure the hourly remaining lifetime value of total financial assets through those three ages. The hourly amounts are calculated by dividing the total financial assets at the beginning of each projection year by 2,000 hours per year times the number of years of life remaining.

Note that each of these age 80, 90 and 100 asset lines may level off due to internal limits for some projections, if total projected total assets are very large. Without such a limitation in some projections, remaining asset values can be very high with only a few years remaining. In these situations, the hourly financial asset value could become very large and would far exceed hourly living costs.

Sample VALUE OF TIME graphic



20) COST-EFFICIENCY % Graphic

Net Cash, Bond & Stock Financial Asset Returns with Returns Lost on Excessive Investment Costs (Real $/year by age)

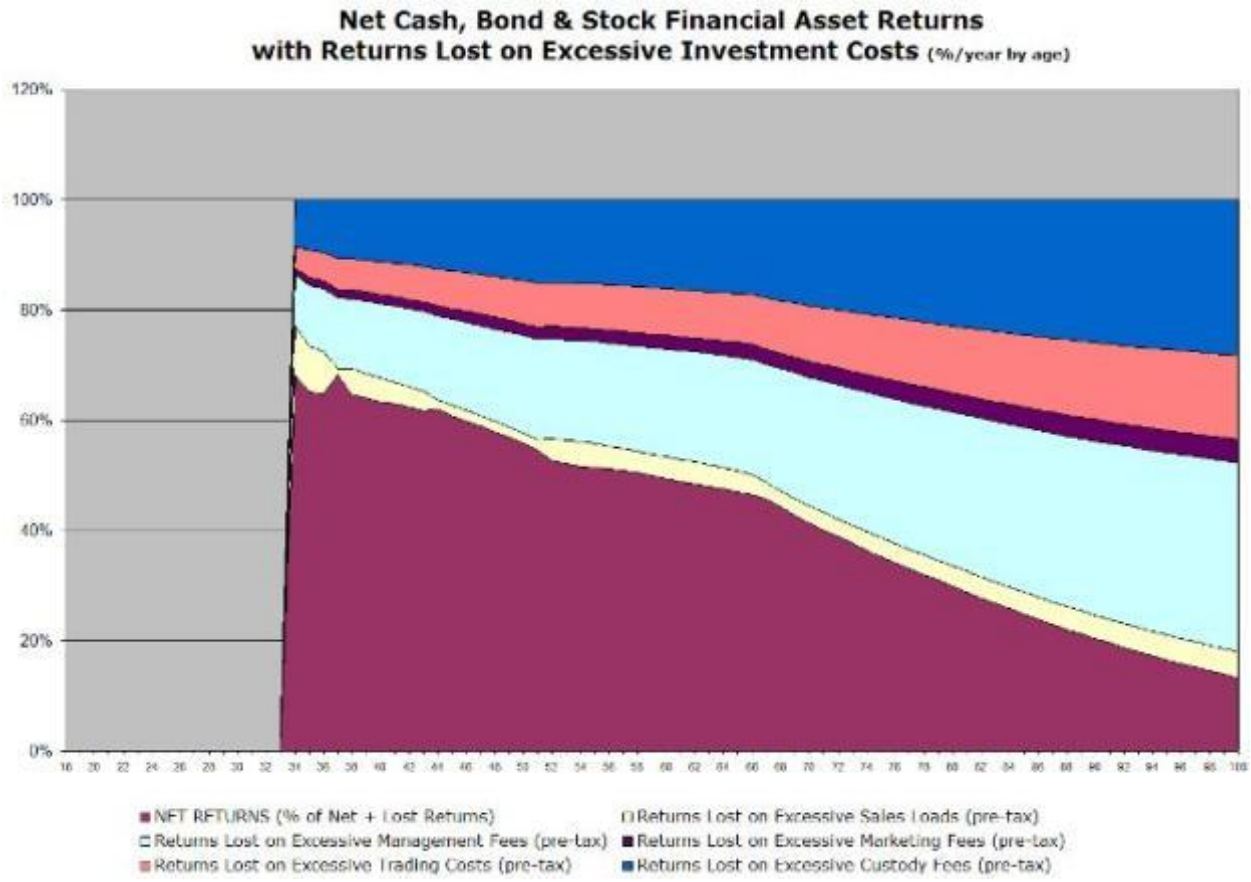
By comparing your current portfolio's investment costs to the investment costs that you believe are reasonable to pay, this and the next graphics illustrate your potential returns with a more cost-efficient strategy versus your projected asset returns and portfolio values with your current costs.

The COST-EFFICIENCY % graphic presents the same information as the following COST-EFFICIENCY $ graphic, but in percentage terms. For people who must draw down their financial assets at various points in their lives to make up for expense shortfalls, the percentage of returns lost to cost-inefficiencies will increase. Of course, almost everyone will have to draw down their assets at various points, because their earned income will not exceed their expenses during all years of their lives.

Because investors only can pay expenses from their tangible retained assets, expense shortfalls will only eat into these assets. In contrast, because the assets that they gave away to cost-inefficiencies are phantom assets or opportunity costs that cannot be used, then those lost assets will grow increasingly faster than your tangible and depletable retained assets.

COST-EFFICIENCY % graphic example

(This is the older style of this VeriPlan graphic. Because it represents the projection scenario described in the accompanying text, this older graphic has been retained.)



The couple depicted in these sample VeriPlan graphics pay investment costs that are typical of the average investor. While surprising to most investors, the lifetime costs of excessive investment costs for the average investor are simply huge. Most investors think that the investment costs that they pay are small, but the compounded and accumulated lifetime value of assets lost to the financial services industry are anything but small.

For this couple, they are losing to fees and taxes about one third of their potential investment returns on their retained assets each year. However, the situation deteriorates thereafter. Keep in mind that all VeriPlan graphics are based upon "real or constant purchasing power" dollars and all these graphics have removed inflation. Investment costs are assessed on nominal or inflationary dollars, but the investor has to live with what remains.

Investors absorb 100% of the negative impacts of inflation. Therefore, when percentages are calculated with real dollars, investment costs take a larger piece of the pie. Net returns after expenses and taxes are what count to the individual investor. As a visual analogy, think of each individual investor who pays unnecessarily high fees as an unfortunate fisherman. Moreover, think of the average investor as Santiago, the fisherman in Ernest Hemingway's "The Old Man and the Sea."

Santiago takes the risks of going to sea and finally hooks a big marlin (his gross return). However, at age 85, he does not have the strength to pull the marlin into his boat. By the time Santiago returns to shore, the sharks have reduced his marlin to only the skeleton, which equals his net return. The sharks of the financial world are nicer in the sense that they usually take less than half of the flesh through excessive fees and unnecessary taxes, before you make it to shore. Unfortunately, these financial sharks circle every investor's boat year in and year out feeding off your catch.

In the short-term, what remains for the couple in this graphic are significantly diminished net percentage returns after excessive investment fees and after unnecessary investment taxes. Then, these investors need to live on those assets through years of negative cash flow related to their income after expenses, taxes, and debt payments. However, phantom investment assets lost or given away through excessive fees and taxes are not similarly drawn down to cover negative cash flow. Thus, these "phantom" assets compound in the future much more rapidly than the assets that this couple would retain and draw upon, as needed. Thus, the proportion of lost assets grows across their lives and comes to dominate their financial projection – particularly as the time horizon increases into multiple decades.

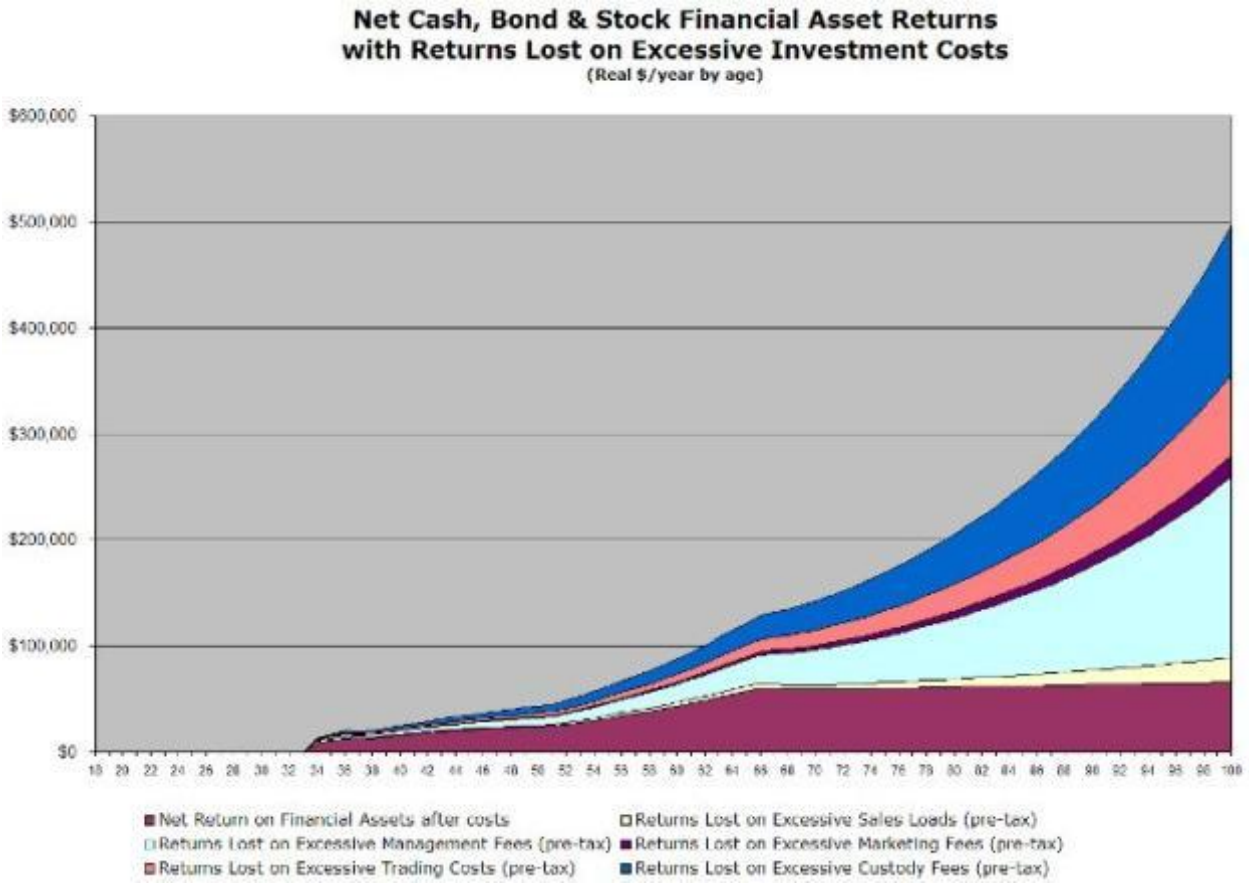
21) COST-EFFICIENCY $ Graphic

Net Cash, Bond & Stock Financial Asset Returns with Returns Lost on Excessive Investment Costs (Real $/year by age)

Rather than being presented in percentage terms, the graphic below is a projection of annual real dollar net returns and of returns lost to various types of investment cost inefficiencies.

COST-EFFICIENCY $ graphic example

(This is the older style of this VeriPlan graphic. Because it represents the projection scenario described in the accompanying text, this older graphic has been retained.)



The COST-EFFICIENCY $ graphic projects the net real dollar returns your portfolio will earn each year. In addition, it projects each of the five investment cost-efficiencies that your portfolio may have. If your current investment portfolio is as efficient as the maximum reasonable costs that you have set above on this worksheet, then your portfolio projections will show no cost-inefficiencies. If this graphic projects inefficiencies, then you may have opportunities to make improvements by reducing your investment costs.

If you have cost-inefficiencies, you should also note that they will continue to grow, even if all your retained financial assets have all been depleted to cover expense shortfalls. The foregone value of these annual costs will continue to increase even after your actual owned assets are gone. These assets still exist and still grow, but they do not in your accounts, since in effect you gave them away.

VeriPlan projects the rate of increase of these lost assets to be equal to the long-term historical weighted average gross (pre-tax) real returns using your chosen asset allocation model, less your reasonable maximum costs assumptions. These lost assets may compound rapidly compared to your retained assets. You retained assets may be depleted by your negative cash flow for living expenses, debts, and taxes, while these lost assets are not subject to these burdens.

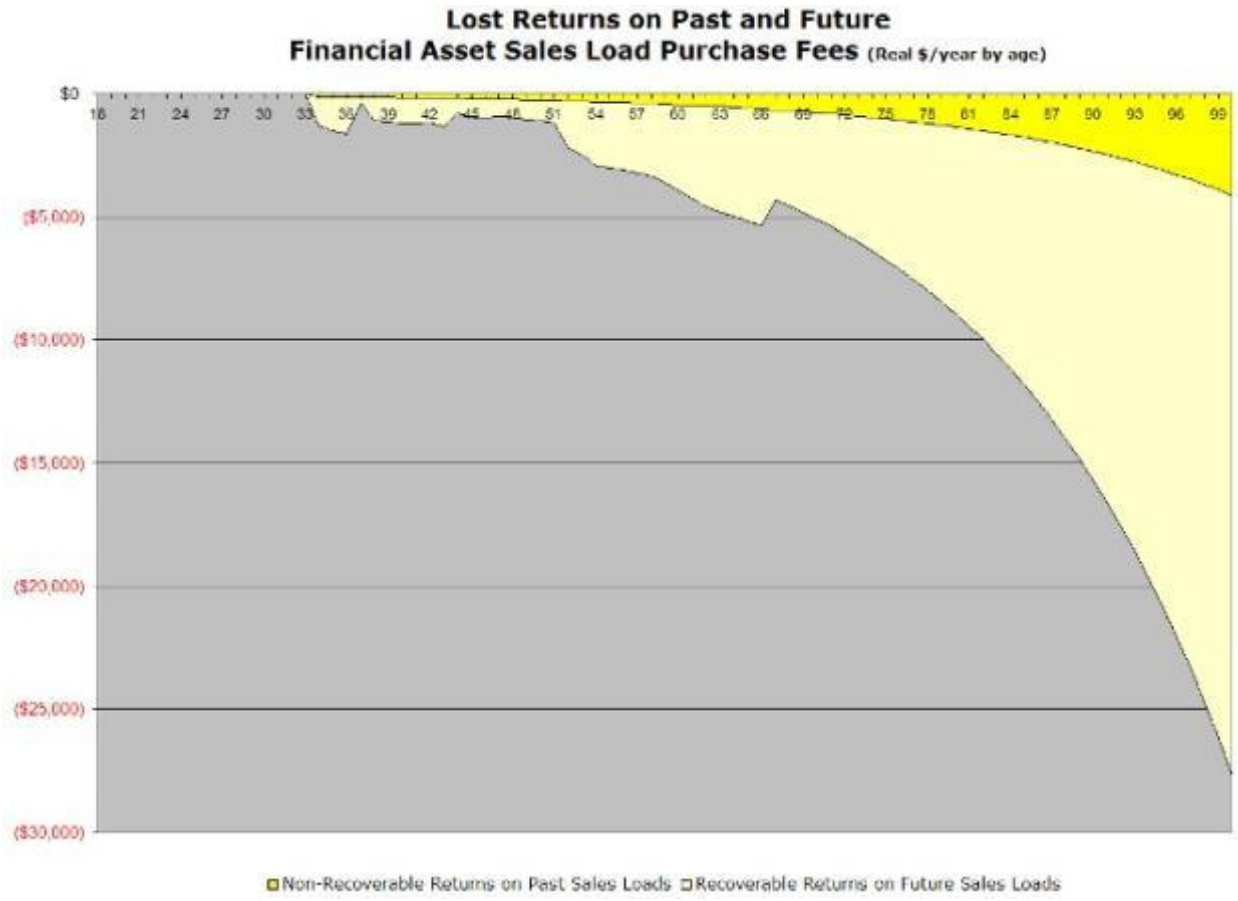
22) SALES LOADS Graphic

Lost Returns on Past and Future Financial Asset Sales Load Purchase Fees (Real $/year by age)

VeriPlan presents information about annual returns lost to both your past and future sales load payments on this SALES LOADS graphic. To quantify the financial impact of loads that you have paid in the past to acquire your current portfolio, VeriPlan uses both the tax basis that you report for each of your assets and the sales load percentages that you report that you paid on the financial assets worksheet. Then, it projects future lost returns related to these past load payments.

SALES LOADS graphic example

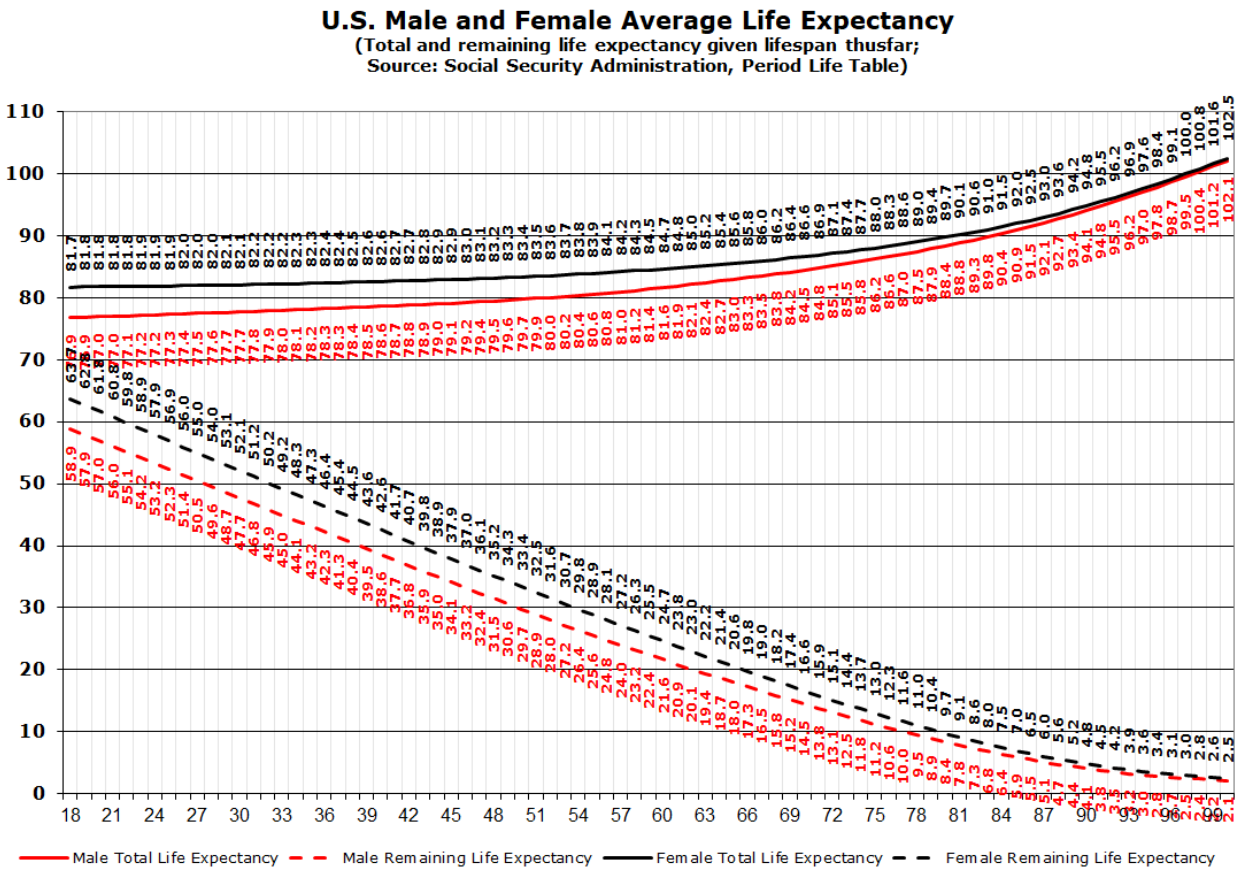
(This is the older style of this VeriPlan graphic. Because it represents the projection scenario described in the accompanying text, this older graphic has been retained.)



While you cannot recover sales loads that you have paid in the past, VeriPlan can help you to understand their potentially very substantial impact on your lifetime projections. In the sample graphic above, this couple cannot avoid the lost returns on investment sales purchase loads that they have paid in the past. However, they can stop paying sales loads in the future and eliminate the much larger beige area of the graph below. If you seek out diversified, low-cost investments proactively, you will find vendors willing to supply them without middleman charges.

23) LIFE EXPECTANCY: Average U.S. male and female total life expectancy and remaining life expectancy by current age

LIFE EXPECTANCY graphic example: (Bold lines are total expected male and female lifespans given current age. Dashed lines are expected average remaining lifespan for those who have attained an x-axis age. Source: Social Security Administration, Period Life Table)



VeriPlan makes no assumptions about the mortality of Earner/User #1 or #2. This mortality chart is just here for your information. As a lifetime cash flow model, VeriPlan projects total cash flows through age 100 without making any assumption about death prior to age 100. For example, if your projection model with whatever assumptions you have chosen projects that your assets would last through age 100 as it automatically covers all of your costs, then your demise in any year prior to age 100 would simply represent the projected gross value of the estate at death.

Four life expectancy lines are graphed on this chart:

- Total life expectancy of a female given one's current age on the X-axis
- Total life expectancy of a male given one's current age on the X-axis
- Remaining life expectancy of a female given one's current age on the X-axis
- Remaining life expectancy of a male given one's current age on the X-axis

It is helpful to understand this U.S. life expectancy data for men and women at birth and for those who live to be 65. Particularly, in the context of political discussions about the viability of

the Social Security retirement system given the stresses caused by the baby-boom generation cohorts moving through the system, people can be careless or selective in their interpretation of life expectancy statistics.

Sometimes you hear that when the Social Security system was founded, life expectancy beyond traditional retirement ages was only a few years, and now retirees are living a couple of decades beyond retirement. Therefore, the system must be fundamentally flawed. Unintentionally or otherwise, this is a misinterpretation of life expectancy data.

Life expectancies have certainly increased, a proper comparison should be across age cohorts for those who have reached retirement age. At birth life expectancies have risen dramatically, but much of that is due to a significant reduction in child mortality. Those who died before working age neither contributed to the Social Security system nor made retirement demands upon it. When trying to understand the Social Security system, changes in mortality and many other factors are in motion, so it is very helpful to read the annual Social Security Administration Trustee's Report.

24) HISTORICAL RETURNS Graphic

U.S. Financial Asset Class Returns and Inflation for 1928 to the most recent calendar year

(Real dollar return percentages -- Annual asset class rates of return have been adjusted for the CPI inflation/deflation rate.)

These historical US asset class total investment returns are provided for reference. These total returns are calendar year returns, including both interest or dividends and capital appreciation. These data sources have been transformed for their use within VeriPlan. In particular, the US 3-Month Treasury Bill, US 10-Year Treasury Bond, and S&P 500 Stock Indexes have been transformed from "nominal dollar" percentage returns to "real dollar" percentage returns. This means that the percentage Annual Inflation Rate (CPI) figures on the chart have already been subtracted from the investment asset class returns that are graphed.

These historical asset class returns series are used to calculate A) the historical real dollar "compounded or geometric average" asset class returns measures and B) the historical statistical standard deviation asset class volatility measures, which are used in VeriPlan's

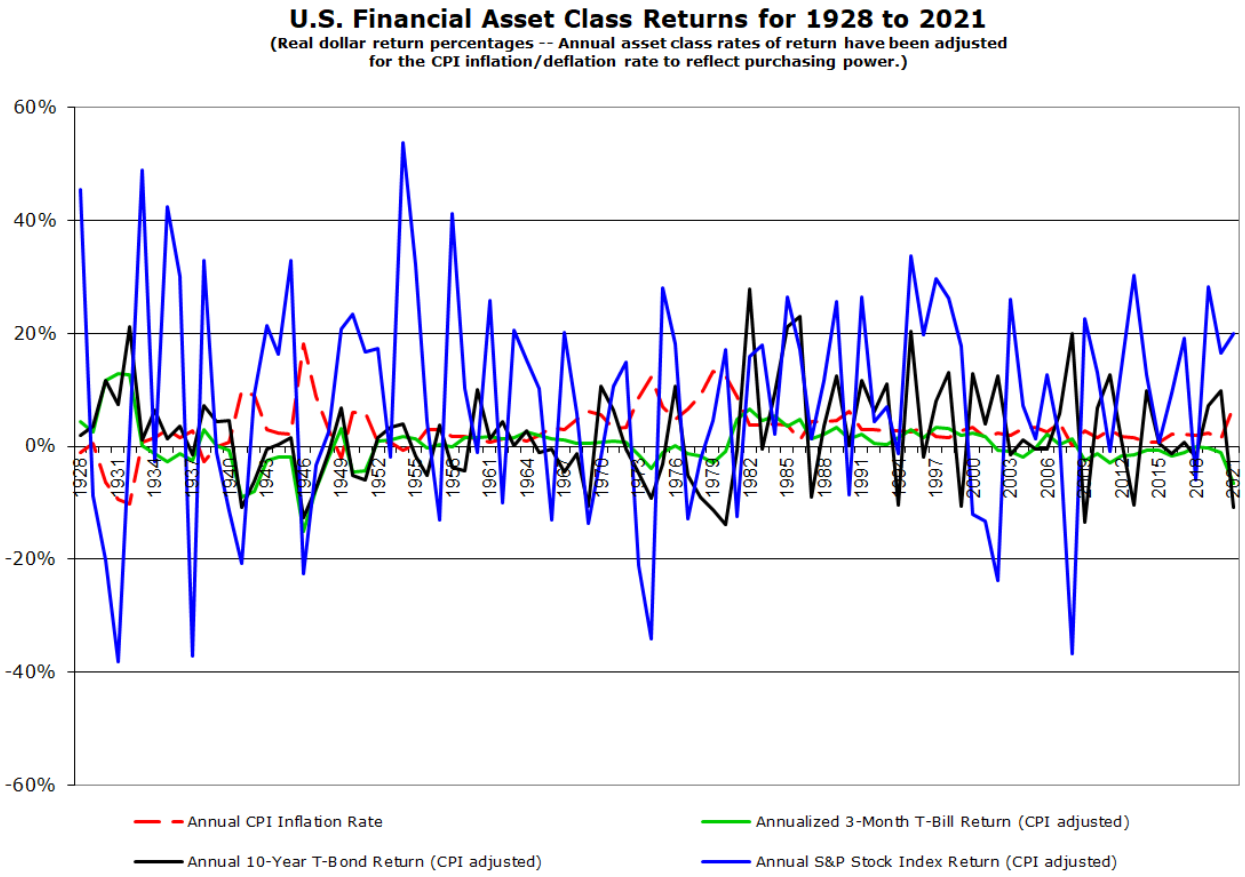
default projections. These compounded asset class returns parameters can be changed downward or upward by the user in the risk and returns worksheet, either arbitrarily or systematically with respect to asset class volatility.

When interpreting these historical asset class returns, note the asymmetric nature of percentage change data relative to absolute dollar returns data. For example, when an asset begins at a particular dollar value and then increases in value by 100%, it only needs to fall by 50% from that increased dollar value to return to the original dollar value. Conversely, when an asset begins at a particular dollar value and then falls in value by 50%, it must increase in value by 100% from that decreased dollar value to return to the original dollar value.

The HISTORICAL RETURNS graphic

This graphic provides a visual history of the annual asset class percentage changes that underlie the compound annualized baseline asset class growth assumptions of VeriPlan's asset projection logic. Two versions of this graphic are provided: A) annual real dollar returns by asset class from 1928 to the most recent year, and B) the same data presented as a series of overlapping five-year rolling returns.

With the risk and returns worksheet, a VeriPlan user has several mechanisms to change these asset class growth rate assumptions going forward -- either systematically with respect to volatility or judgmentally/arbitrarily. However, of course, those user adjustment would not affect this graphic, since it is historical in nature.



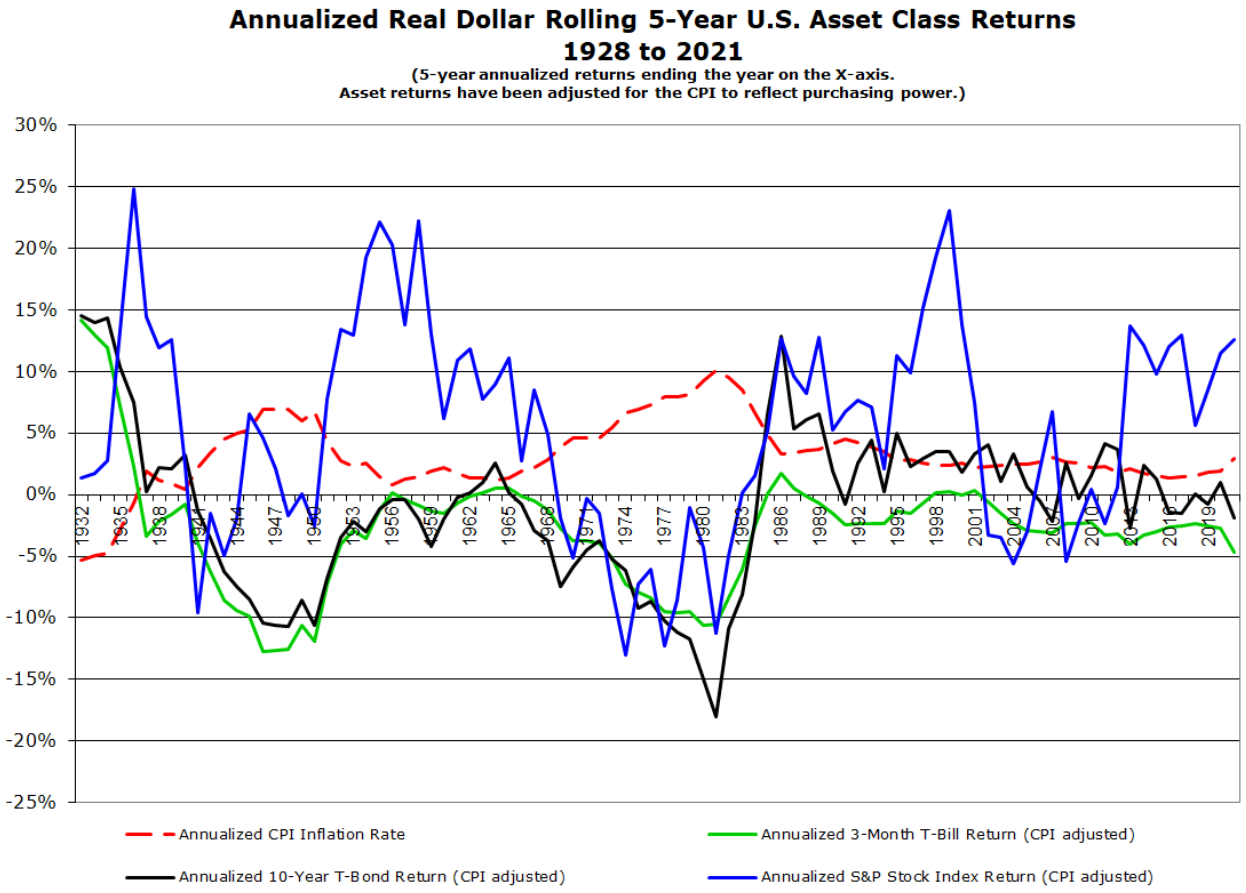
These historical US asset class total investment returns are provided for reference. Note that they are calendar year returns, including both interest or dividends and capital appreciation.

25) ROLLING RETURNS Graphic: Annualized rolling 5-year real dollar asset class returns and CPI inflation from 1928 to the most recent year

The ROLLING RETURNS graphic

This chart uses the annual data from the HISTORICAL RETURNS chart above to develop the annualized real dollar returns for rolling five-year periods that end on the year indicated on the X-axis.

Annualized rolling averages, such as these five-year rolling averages can be easier to interpret visually. Just keep in mind that any rolling average will provide an understanding of cumulative returns for the period of the rolling average, but also may smooth out the variability of returns when both negative and positive returns have occurred for a particular asset class over that same period. Therefore, it is useful to inspect both annual returns and rolling period returns.



The best home and family financial planning software available

https://www.theskilledinvestor.com/VeriPlan/

Appendix: Author's background

Lawrence (Larry) Russell is the author of this book. Since 2001, I have been President and Managing Director of Lawrence Russell and Company, a personal financial planning services provider and registered investment adviser in Pasadena, California. I am also a former technology industry business executive with a background in corporate business management, technology start-ups, financial modeling, investment management, economics, statistics, taxation, and accounting.

For my resume, see my LinkedIn profile page:

https://www.linkedin.com/in/larryrussell

To find my books and publications see:

https://www.theskilledinvestor.com/VeriPlan/financial-planning/

Overview of my financial planning and investment management background:

My knowledge of financial planning and investments has been developed through:

* education at M.I.T. (BS-1975), Brandeis University (MA-1979), and Stanford University (MBA-1982) [That's right. I'm getting older every day.]
* twenty-five years of corporate and start-up management experience in the business development, financial planning, corporate development, and investment functions
* studying the scientific finance research literature in depth to find evidence about which investment and financial planning strategies do and do not work
* design and development of VeriPlan, a lifetime financial planning software product

After graduating from MIT in 1975, I conducted statistical research on employee benefit programs at the National Manpower Institute in Washington, D.C. In 1978, I moved to beautiful California and joined the Institute for the Future, a think tank in Menlo Park, California.

Using sophisticated computer projection methods for Fortune 100 clients, we developed long-range planning scenarios incorporating demographic, econometric, financial, and technological factors. My experience at the Institute for the Future was helpful later in the design of VeriPlan, since VeriPlan functions as a fully integrated and automated lifetime scenario projection engine and financial planning decision support tool.

Completing his MBA at Stanford in 1982, I joined Hewlett-Packard's computer systems division and led business development and marketing initiatives. At Sun Microsystems from 1991, I acquired product lines from technology companies via negotiated licensing arrangements. As Director of Corporate Development, during my last four years at Sun Microsystems, I directed mergers and acquisitions projects, evaluated investment proposals made to Sun's senior executives, including external investments in private firms.

In 1999, I co-founded Codexa Corporation in Altadena, California with an MIT undergraduate roommate, Dr. David J. Leinweber, an expert on computationally driven institutional investing. As Codexa's EVP and CFO, I directly managed the finance, accounting, business development, human resources, and legal functions. I developed Codexa's information service provider business plan, hired the executive team, and helped to raise an $8M Series A venture round.

Codexa developed an advanced and automated systems service that provided Internet information filtering services to Wall Street securities industry professionals. Our service

architecture is described in detail Chapter 6 of "J2EE Technology in Practice: Building Business Applications with the Java 2 Platform, Enterprise Edition" by Rick Catell and Jim Inscore.

Our company's early stage clients included numerous major Wall Street firms. Despite having developed working technology, Codexa was still a development stage company with an unsustainable negative cash burn rate. In 2001 the securities, technology, and telecommunications industries fell off the cliff and needed Series B financing was not available, as the dot bomb bubble imploded.

With the technology and securities industries on their backs in 2001 with all four legs in the air, there were few long-term career opportunities for a person with my background. I decided I was not going to hunt for nonexistent tech industry positions along with the haystack of other unemployed professionals in the wake of the dot com crash. Given the economy in 2001, I soon reached the conclusion that, however unwillingly, I must be retired – at least from the high tech industry – at the ripe old age of 50. In 2001, I established Lawrence Russell and Company, initially as a management consulting firm, and it later evolved into a financial planning services firm.

As a self-directed investor during my corporate career, I saved my pennies and invested them according to the principles that I had learned at the Stanford Business School, Thus, retiring at 50 was feasible, while not desirable to me. Since I was too old for basketball and did not care for golf, I began to catch up on the investment and personal finance research literature to see what was new, since I had been at Stanford in the early 1980s.

As I searched the web, university libraries, and on-line scholarly paper repositories, I was impressed by how much useful personal financial planning information was scattered around the academic world. It seemed to me that many individuals and families were starved for just this kind of objective financial and investment information. At the same time, people were drowning in a sea of self-interested securities and financial services industry sales pitches that pushed overly expensive and unnecessarily risky investment products.

After a year of full-time reading, clarity began to emerge. Then, and in the decade following, I have read thousands of research papers in their excruciating economic and statistical details. These scientific finance papers hold information that is directly useful to individuals for financial

planning and investing. Yet, academic papers are written for an audience of other academics and highly trained industry research professionals and not for individuals.

Through this research, I reached these primary conclusions:

1) The financial research literature clearly demonstrates that the optimal investment strategy for individual investor is a completely passive and most broadly diversified strategy that cuts all investment fees, costs, taxes, and time commitments to the very bone.
2) Lifetime family financial planning should never be one-size fits all or even several sizes fit all. While there are commonalities, every family's current and intended future financial situation is unique and must be modeled to develop a customized and implementable long-term financial plan.

To make some of this academic finance information more accessible to the general public, in 2002, I began to write summary articles and publish them on the web. In the past decade+, I have published well over a thousand financial and investment articles on the web. The easiest way to find them is to go to my The Skilled Investor website: http://www.theskilledinvestor.com/ On the front page of The Skilled Investor you will find a hierarchical listing of many of these articles. In addition, the red colored links in the left-hand sidebar of The Skilled Investor website will take you to my other personal finance, financial planning, and investing websites.

I also became convinced that I understood more efficient and scientifically verifiable pathways for individuals to optimize their financial planning and investment strategies. Furthermore, I realized that the computational details and complexity of the subjects involved prevented individuals from focusing on financial decision-making. Simple spreadsheets, free online financial tools, and back-of-the-envelope calculations were generally useless when hundreds of personal income, expense, debt, tax, investment, and other factors unique to each family were in play.

In 2002, I had begun to design and develop a financial and investment planning spreadsheet for my own family. I got a bit carried away with this project. In 2003, designed the architecture for a fully automated, completely integrated, and highly customizable lifetime planning software tool build upon the Microsoft Excel spreadsheet engine. This software eventually became VeriPlan.

I designed VeriPlan to be a decision support tool set for a financial planning advisory business that I intended to set up. I also designed VeriPlan to be self-learning and self-updatable, so that do-it-yourself users could purchase personal use copies and licenses through the Internet. I realized that the mass of Americans would never have access to a personalized lifecycle planning application, unless an inexpensive software product was developed. Furthermore, I decided that VeriPlan must be priced very low, so that everyone could afford it.

I estimate that I put between 3,000 and 4,000 personal hours into the development of VeriPlan between 2003 and 2006. When you are "retired" and self-employed you do not have to keep a time card. By 2006, the functionality of VeriPlan was complete and robust. Since 2007, I estimate that I have spent between 300 and 500 more hours annually working on VeriPlan. Over these twenty years of software development and enhancement, total cumulative hours are roughly 10,000. These hours of effort are an indication of how complex it is to develop a fully integrated, automated, and robust lifetime financial and investment planning application.

Before starting my development of VeriPlan in 2003, I had searched for a sophisticated and customizable lifetime financial planning tool to use myself. I was unimpressed with what I found. Instead of providing an interactive and personalized modeling environment that a client could use interactively with an advisor, many professional financial modeling tools had significant functional and analytic limitations. They also required extensive training to be used properly. Worse, all of these professional tools just cost too darn much.

Furthermore, and perhaps most dismayingly, many of these computerized professional planning tools are largely designed to channel clients toward the selection of more costly financial, securities, and insurance products. Through my research, certain scientifically verifiable selection criteria for financial and investment products had become very clear to me. The cost of any financial or investment product is at the top of this list of selection criteria.

With the scientific planning and investing knowledge that I gained from my reading and publication of financial articles on the web and from the development of VeriPlan, I also decided to become a financial and investment planning adviser. In 2004, I passed the Series 65 "Uniform Investment Adviser Law Examination" administered for the North American Securities Administrators Association (NASAA) by the Financial Industry Regulatory Authority (FINRA).

In 2005, my firm, Lawrence Russell and Company, became a Registered Investment Adviser in the state of California (Certificate #133101).

Using VeriPlan as an integral part of my financial services offering, I began to deliver comprehensive financial planning services to clients residing primarily in the Pasadena, California area. To avoid all conflicts-of-interest, I set up a purely fee-only advisory practice. I charge hourly or fixed fees for customized planning services. To avoid conflicts-of-interest, I do not sell any investment or insurance product of any kind. I do not charge any percent of asset fees. I do not accept or pay third party fees of any kind.

I refused to adopt the percent of assets advisory compensation model that is standard in the industry. I did not set out to "gather assets" to increase my fee revenue and live off of other people's hard-earned investment assets. Instead, I chose only to bill clients directly for services on a fixed fee for project and hourly basis.

Direct compensation paid by my clients is less lucrative than the commission or asset fee models that absolutely dominate the financial services industry. Direct income from clients paying reasonable fees combined with additional income from writing personal finance software, eBooks, and websites has been enough for me.

Furthermore, this is a far superior approach to compensation, because all these activities allow me to develop and implement the best financial practices for my clients and readers. In contrast, the commission or asset fee models dominating the financial services industry force almost every professional to spend an inordinate amount of their time hustling to attract very well-off clientele who already have substantial investment assets. All this hustling for new, wealthy clients leaves these advisors with much less time either to understand or to deliver high quality financial services in their client's best interests. In fact, this leads to a never-ending cycle, wherein most advisors charge their current clients far too much, while they spend much of their time chasing new clients who will in turn be charged too much.

Direct compensation from my clients and income from my financial planning books and software has been very liberating. I can tell my clients and the readers of my books exactly what the financial research shows. I can say and write what I think has been proven by sound academic research to be in the best interests of real people without giving any thought to my own

interests. This is the very definition of the fiduciary care standard that financial advisors are supposed to use with respect to the primacy of the interests of their clients.

This approach also allows me to help my clients and my readers get the myriad of financial industry hands out of their family wallets. Some people feel that they pay too much for financial services, but they keep paying anyway, because they do not understand that they have do-it-yourself alternatives. Most others have no idea of just how ghastly costly their relationship with the financial services industry will be over their lifetimes. This book can help you to understand the huge costs that the financial industry imposes upon their "retail" clientele to the significant lifelong detriment of these retail clients.

When some of these retail clients finally get fed up with the self-interested greed of the financial industry, they must have an alternative way to do-it-themselves or they just become more frustrated. Just pointing out the problem is not enough. In place of the frustration, people need practical solutions that enable them to self-manage their own financial affairs. In reality, financial self-management is not very difficult, but it takes a commitment on your part both to understand what is better to do and then the sustained will to do it.

Over the past several years, I have developed financial planning and investment management materials and processes for my clients and to allow them to cut out unnecessary and vastly overpriced financial industry "services." My focus with my direct clients is to work cooperatively with them:

a) to develop a durable lifetime plan that they can implement themselves,
b) to increase their knowledge and competence in self-management, and
c) to supply them with sophisticated, yet easy-to-use software planning tools.

My clients can use this knowledge and these materials to implement their own plans without having to repeatedly pay more and more advisory fees and many other excessive financial costs year after year. In addition, to helping directly some of the do-it-yourselfers out there, I have spent thousands of hours over the past decade plus, making these materials available to the general public in the form of web articles, eBooks, and lifetime financial planning decision support software.

I have researched and written various objective books that can help you cut your investment expenses and increase your wealth. To learn more, go to this web page:

https://www.theskilledinvestor.com/VeriPlan/financial-planning/

Notice: This financial information is for educational purposes.

This book provides financial information, and all information in this book is solely for informational and educational purposes. This book does not provide financial advice or investment advice of any kind. Under law, specific investment advice can only be dispensed to you by someone who is authorized to do so and who has an understanding of your particular financial situation.

This book attempts to provide information that focuses on the best interests of individuals and families. Fiduciary care of people's financial interests requires knowledge, experience, and the absence of financial conflicts of interest that distort the quality of information and advice given to people.

Global securities markets have a dog-eat-dog ethos with winners and losers. Highly competitive and ruthless securities markets are necessary for efficient price setting and capital allocation. I applaud when full-time financial professionals engage in competition among themselves with knowledge, resources, and skill.

However, when similar strategies are applied to individuals who lack knowledge, education, and resources, then this is just an unfair fight. When the inadequacies, ignorance, biases, and misperceptions of individuals are exploited systematically, this is deplorable. Unfortunately, this approach is standard operating procedure for many parts of the financial services industry.

When financial industry marketing and promotions imply that there is a partnership or advisory role, but actions taken indicate that this is not the case, then this is moral bankruptcy. When the financial industry is so strong that it distorts fairness in governmental regulation, then many deplorable behaviors are not criminal, largely because laws, regulations, and enforcement are too weak.

I believe that enlightened individuals should never naively expect fairness, when they deal with much of the financial services industry. Despite the financial industry's recent self-induced

credit crisis, self-immolation, and taxpayer bailout, there is no reason to believe that this industry will ever change voluntarily. The game is just too profitable for the financial services industry and its excessively compensated employees to expect things ever to change fundamentally.

The mass of American financial consumers are trusting, docile sheep regarding their personal financial affairs. The amount they are willing to waste on overpriced financial services is astonishing. Far too many US consumers pay far too much and get woefully little value in return from the financial services industry. The industry repeatedly scrapes the consumer excess off the table and stuffs it into its salaries, bonuses, and corporate earnings reports. The only salvation for most individuals is that eventually some of them will wake up and decide to stop paying tribute to this beast.

Do not be naive about financial advisors. Figuratively, (and literally) they come in all shapes and sizes. In general, financial "advice" laws, regulations, and enforcement related to financial "advisors / advisers / planners" are weak and are riddled with loop holes. Surveys have clearly demonstrated very widespread consumer confusion about different types advisors and their responsibilities related to their clients. Caveat emptor or "let the buyer beware" is the reality related to all financial advisors, but far too many people are naive and trusting in the face of the complexity of finance.

It is a very bad idea to go into any advisory relationship assuming that the advisor will automatically have your best interests in mind and act solely for your benefit. If this were the reality, then the financial services industry would not be so very large and so very profitable. If the global financial services industry were to put the interests of their customer ahead of their shareholders, then the financial industry simply would not be one of the largest industries on earth.

Anyone with a bit more than a vague interest in the financial world around them grows up to understand that the capitalist business model and its associated self-interested profit motive predominates. Shareholders demand maximum returns on their invested capital. Capitalist enterprise executives, who are the agents of these shareholders, are tasked with maximizing shareholder returns. Incentive systems attempt to align manager and shareholder interests. When these self-interests conflict, sometimes the manager agent tail can wag the shareholder dog.

Nevertheless, such agent and shareholder conflicts almost always are focused on how the maximum profit pie gets split and not on the "best interests" of customers.

Regarding the profit motive and the financial services industry, see this five-part article series that I published in 2007 prior to the financial crisis. It is entitled:

The Biggest Personal Finance Story of the Past 30 Years

https://www.theskilledinvestor.com/financial/Biggest-Personal-Finance-Story-for-Past-30-Years_Part1.html

I urge you to read this five-part article series -- before your hire any financial advisor and their firm.

Here are some highlights from what I wrote in this series of articles:

> "The biggest personal finance story of the past 30 years has been the dramatic growth of the market capitalization of financial services firms within the U.S. equity markets. ... The reason that this is so important to your personal finances is pretty straightforward. Simply put, most individuals pay far too much for financial products and services. Their continuing overpayments show up in the increasing value of financial services company stocks. People have paid far too much for years, and the industry's excessive charges have been increasing for years."
>
> "In return, individuals receive far too little. Exorbitant and increasing investment costs, high banking fees, predatory credit card charges, excessive insurance costs, etc. simply represent a massive wealth transfer from the personal pocket books of average individuals into the coffers of the financial services industry and into the high paychecks of its employees."
>
> "There is no reason to believe that industry self-regulation or governmental regulation will ever fix these conflict-of-interest problems. Only those individuals who become wise enough to be proactive and seek out lower cost financial products will stop getting fleeced. The vast majority or individuals will just keep on paying excessive costs to the financial industry, while they receive inadequate value in return. ... The choice is yours as to whether you want to keep pouring in your money or whether you want to adopt a lower cost personal finance strategy."

So, if you really do need financial or investment advice, you should hire a financial advisor, but you should do so with your eyes wide open to avoid getting fleeced. Understand and remember that advisors are expensive, yet some of them could be worth paying for. If you do not feel you can manage your finances entirely by yourself or you have particular needs that require professional expertise and advice, I suggest that you interview several advisors carefully.

Be proactive in looking for the right advisor and do not simply follow the lead of a friend who happens to recommend an advisor that they trust. While that recommended advisor might be fine, "trust referrals" are potentially problematic. Problems can arise, because along that chain of trusted recommendations, it is possible/probable that nobody really did any actual due diligence that might have unveiled potential advisory problems. Some of the most pernicious advisor frauds and scams have been perpetrated against religious and other affiliated groups that have been infiltrated by fraudsters who gained the trust of few members and then widely expanded their network of fraud through trusting referrals.

When a family member, friend, or co-worker makes a recommendation of a financial adviser, that could be a good start. However, that recommendation does not absolve you of your personal responsibility to do your own due diligence. Before you start to trust that this advisor and commit your hard-earned money, check out the advisor and decide for yourself whether he really will take care of you and your family and will always put your interests ahead of his and his firm's interests.

I have published a set of 38 articles about financial advisor selection, regulation, payment, frauds, and scams. These articles might be helpful in your search, and you can find here:

https://www.theskilledinvestor.com/financial/financial-advisors-investment-counselors.html

Read and understand these web articles and this book. An advisor acting in your best interests would tend to follow the investment principles that I discussed in my books and my web articles. I never change my fundamental financial planning and investment principles. That is the whole point about developing lifetime financial principles. Financial principals should valid, research based, and durable to navigate an uncertain and unpredictable future.

I strongly suggest that you choose an advisor whom you pay directly. Furthermore, choose an advisor who does not accept compensation from the industry in any form. Seemingly free financial advice can cost you very dearly over your lifetime. Never lose sight of the stark fact that throughout your life you are a walking, breathing financial industry profit center.

So, to summarize: This book DOES NOT constitute or provide personalized financial planning advice, personalized investment advice, or any other kind of personalized financial advice under the laws and regulations of the United States of America and its various States or of any other country in the world. In no way does this book constitute a solicitation or offer to sell investment securities, investment advisory services, financial planning services, or any other kind of financial service as defined under any financial or securities law anywhere in the world.

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Chapter 3

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* Section 3.6: Humpty goes splat; photo by derekskey from flickr.com

Chapter 10

* Section 10.1: DIY; image from FreeDigitalPhotos.net
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Chapter 11

* Section 11.5: Arrows and target; image from FreeDigitalPhotos.net
* Section 11.7: Empty wallet; image from FreeDigitalPhotos.net

Appendix

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