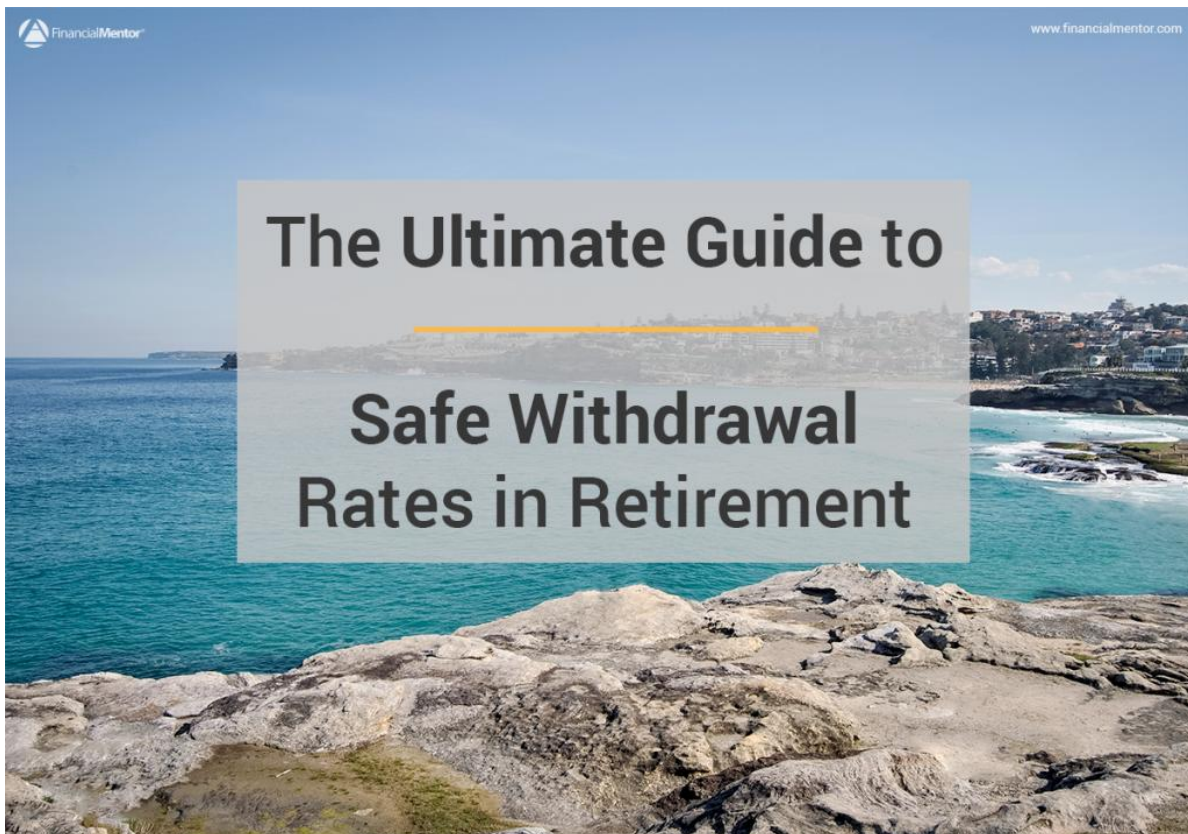


# Are Safe Withdrawal Rates Really Safe?

Discover The Little-Known, But Highly Dangerous Risks Hiding Behind The 4% Rule, And The Simple Solutions to Correct the Problem



## Key Ideas

1. Reveals the hidden dangers behind the 4% Rule that every future retiree must know.
2. Learn how supposed “safe” withdrawal rates can allow you to run out of money before you run out of life.
3. Get the 4 step process that safeguards your retirement savings against potential errors.

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What do retirees in 1921, 1966, and 2010 have in common?

Very little... and that's the problem.

Each faced a different life expectancy and invested in a different economic climate with varying inflation expectations, interest rates, and market valuations.

The truth is these dates weren't chosen at random: One had the highest safe withdrawal rate in recorded history, the other the lowest, and the third barely survived the ravages of inflation.

Each of these three retirees lived through dramatically different economic times.

Yet, according to conventional wisdom they all share the same safe withdrawal rate in retirement – roughly 4%.

It doesn't make sense.

How can a static, one-size-fits-all solution to a problem as varied and complex as knowing [how much money you need to retire](#) be correct?

How could retirees in 1921, 1966, and 2010 share the same safe withdrawal rate when market valuations, interest rates, inflation expectations, and expected life spans were completely different?

It's impossible. It's wrong.

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Yet, that is the conventional wisdom in the financial planning profession. It is known as the “4% Rule,” and it is widely considered “the truth” in safe withdrawal rates for retirement.

The problem is it’s *not* the truth and every day people risk a lifetime of retirement savings on it. There are better solutions.

In this article I will reveal the problems hiding behind the 4% Rule and provide you with practical solutions you can implement for your retirement security.

## Why Safe Withdrawal Rates Are Critically Important

Retirement income is an inherent conundrum.

How do you convert a volatile pile of assets into a stable income stream you can never outlive?

Every new retiree needs to answer the same critical question: [What is the maximum retirement income I can withdraw from savings](#) without running out of money before I run out of life?

It’s the single most important question I get from retirees and near retirees.

The reason is because safe withdrawal rates impact every aspect of retirement planning – from the lifestyle you can afford to the amount of savings needed to fund it.

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Small errors in safe withdrawal rates multiply over many years, which causes huge financial impacts. Consider these:

- 1. Lifestyle You Can Afford:** Few people realize that a mere 1% safe withdrawal rate change makes a big difference in spending during retirement. It seems counter-intuitive because the number is so small. However, a 1% variation from the industry standard 4% assumption will increase (or decrease) your income in retirement by 25%. That can make the difference between a world traveler lifestyle or living at home on hot dogs. In other words, it pays to calculate your safe withdrawal rate as accurately as possible. Small changes in the numbers equal huge changes in the lifestyle you can afford.
- 2. Savings Required:** The amount you can spend each month from savings and [the amount of savings you must build](#) to support your retirement are different sides of the same coin. One implicates the other mathematically. For example, the “4% safe withdrawal rate” is mathematically equal to the “Rule of 25” (you need 25 times your first year spending in savings). Similarly, a 3% safe withdrawal rate equals roughly 33 times your first year retirement spending in savings. Using the two examples above, a mere 1% change in safe withdrawal rate when spending \$100,000 per year in retirement is the difference between building a nest equal to \$2.5 million vs. \$3.3 million – obviously a big deal. Conversely, knowing you can safely spend 6% would knock the savings requirement down to \$1.7 million. That’s why it is so important to figure an accurate safe withdrawal rate. It can change the amount you need to [save for retirement](#) thus shortening the time it takes for you to reach your financial goals.
- 3. Risk To Financial Security:** If you withdraw just 1% more than your actual safe withdrawal rate you will go broke before you die. It ‘s a mathematical truth. A mere 1% less would have allowed your nest egg to last a lifetime. That’s why accuracy is critical – because the razor

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thin margin between 1% too much and getting it right is literally the difference between poverty and financial security.

Like Goldilocks, there's a sweet spot in retirement spending somewhere between "too much" and "too little" that is "just right."

In an ideal world, you would exhaust your last penny from retirement savings as you exhaled your last breath. That's the theoretical objective of safe withdrawal rates.

It's a high-stakes game where the quality of your life during retirement is dependent on getting the answer right.

For that reason, there is probably no question more important in retirement planning.

Unfortunately, the [conventional wisdom can be dangerously misleading](#).

**Lesson Learned:** Withdrawing the right amount of [money from savings](#) is one of the most important [retirement planning](#) questions you will confront. Take too much and you blow up: take too little and you leave lifestyle on the table. You need to get as close to the right amount as possible. It's worth the effort – and it's worth reading this long article to understand the issues.

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## A Quick History of Safe Withdrawal Rate Research

The state-of-the-art knowledge in safe withdrawal rates has progressed dramatically since the early 1990s.

What began as a naïve exercise in simple amortization has progressed to sophisticated regression analysis and Monte-Carlo research.

You may want to skip straight to the results and conclusions instead of learning the research history behind safe withdrawal rates first – but it's not that simple.

The 4% rule became the sacred cow for a reason, and a new generation of research is teaching important principles that can make big differences to your financial future.

It pays to learn this stuff. It sets the context for the rest of the discussion that follows and is essential to your making smart decisions with your money.

To keep these ideas accessible I've organized them into three distinct generations of knowledge:

### Generation 1:

The first generation in safe withdrawal rate research was naively based on [mortgage amortization](#) – but in reverse.

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Rather than [pay down a mortgage \(like your home\)](#), you would draw down an asset account (like your retirement savings).

The idea seemed intuitively correct even though it was fatally flawed (due to volatility and returns sequencing risks as shown below).

Even the venerable Peter Lynch (1995) succumbed to the intuitive appeal of the mortgage-style model when he falsely stated a 7% withdrawal rate would be prudent for an all stock portfolio.

He was forced to retract this obviously incorrect statement when 2nd Generation research proved conclusively how such a withdrawal rate could land you in the poor house.

## Generation 2:

Bengen (1994) ushered in the second generation of safe withdrawal research when he published a groundbreaking Journal of Financial Planning article that still sets the basic framework employed by most research to this day.

He used historical simulations of long-term U.S. securities index data to define "Safemax" as the highest withdrawal rate, expressed as a percentage of the account balance on the first day of retirement, and adjusted for inflation annually, that allowed for a minimum of 30 years of withdrawals over all rolling historical periods in the database.

Bengen concluded the maximum safe withdrawal rate was about 4.1% for stock allocations between 37%-67% and later upgraded that amount to 4.5% when small cap stocks were included in subsequent research.



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Cooley, Hubbard, and Walz (1998) took the 2nd Generation model to the next level in an effort to overcome the sequencing risk in data (as defined below).

They showed a 95-98% chance you won't run out of money if you applied a 4% withdrawal rate.

This study, dubbed the "Trinity study," and popularized by Dallas Morning News columnist Scott Burns, was updated in the April 2011 Journal of Financial Planning with similar results.

Other 2nd Generation researchers have come to similar conclusions depending on assumptions applied.

Results vary slightly from study to study based on asset allocation, data sources, whether or not fees are deducted, frequency of portfolio rebalancing, and much more.

**The key point defining all 2nd Generation research is that each study applies the same basic premises thus producing extraordinarily consistent results.**

This consistency caused the 4% Rule to become conventional wisdom and be mistaken as "truth" when it is really just a product of the research premises.

To understand the problems with 2nd Generation research we need look no further than the amazing breadth of dubious assumptions behind the results:

- Safe withdrawal rate research was based on U.S. securities data history. No foreign market data was included.



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- The research typically assumes a static allocation to stock and bond indexes as the only viable asset classes. Alternative assets are not included.
- It assumes 30 years of retirement spending regardless of expected longevity.
- It assumes no investment expenses by using historical index data – obviously not true for any real-world investor.
- It assumes a fixed spending amount that grows with inflation and does not adjust based on changes in portfolio value or age – not true for most retirees.
- It seeks to determine the highest beginning spending amount that can be adjusted for inflation without ever running out of money that works across all time periods in the database. It's sort of a least common denominator concept.
- All data periods are created equal with no adjustment for valuations or interest rates at the time you retire.
- You must have 30 years of subsequent data to know if the withdrawal rate was actually safe, meaning retirements beginning after 1985 were unknown and theoretical because they were out of sample. (This was written in 2014.)

While these assumptions make for expedient research, there's a clear sacrifice of accuracy when compared to the real-world retirement you will face.

Below, I'll examine each of these assumptions in detail to show you the implications.

Then, you can decide how relevant 2nd Generation research conclusions (The 4% Rule) are to your retirement planning.

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## Generation 3

3rd Generation safe withdrawal research has attempted to correct the assumption limitations outlined above to provide a more accurate picture of how safe withdrawal rates might apply to real-world retirees like you and me.

In essence, the 3rd Generation models stand on the shoulders of the excellent research that came before it by recognizing the limitations, correcting the flaws, and producing more accurate models. The 4% rule has serious problems and 3rd Generation research seeks to correct those errors.

Rob Bennett was an early pioneer in 3<sup>rd</sup> Generation modeling by advocating (through various online forums) that withdrawal rates must be adjusted for market valuations consistent with research by [Campbell and Shiller \(1998\)](#).

[Also, Wade Pfau \(2010 – 2011\)](#) broke new ground by applying safe withdrawal rates to international market data with shocking results. He also applied valuation, interest rate, and inflation metrics in regression analysis to form a dynamic and robust safe withdrawal rate model.

The key point illustrated by 3rd Generation research is that a deeper level of complexity underlies the sacred cow “truth” known as the 4% rule.

It was the best answer for its day, but those days are gone. It is a 2nd generation model whose shortcomings have been proven well enough that it must be retired.

With that said, the 3rd generation research is in its infancy and has only corrected certain shortcomings from the 2nd Generation model.

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There are many remaining assumptions you must still individually answer to determine your personal safe withdrawal rate.

For that reason, we'll examine each of the shortcomings of the 2nd Generation models below and use 3rd Generation research to demonstrate viable solutions where they exist.

In the process, I'll explain all issues remaining unresolved and point you toward viable answers to consider. The result will be a safer withdrawal rate than the simple rule-of-thumb provided by conventional wisdom.

**Lesson Learned:** Safe withdrawal rate research has been through 3 generations of growth and sophistication in a very short time. However, the 2nd Generation model, known commonly as the 4% Rule, is unfortunately locked in most expert's minds as "truth" when 3rd Generation research has already discovered more robust and accurate models. Regardless of the model used some underlying assumption problems remain that must be adjusted for.

Let's dive into the underlying issues built into 2nd Generation safe withdrawal research so we can see *why* they pose a problem.

## Backcasting – Data Sampling Problem

Data limitations are one of the most obvious problems with all safe withdrawal research.

2nd Generation models have been tested exclusively on U.S. data – sometimes as far back as 1871.

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While that is a solid long term study it completely ignores international data.

**The implied assumption is the future should be no worse than the past as evidenced by U.S. asset price growth.**

But is that really true?

The U.S. was the prom queen of the economic world for the last 130 years.

She led a privileged life that likely introduces an overoptimistic bias to research based exclusively on her data. Consider the following:

- U.S. stock market capitalization grew from 22% of world total in 1900 to 54% in 2003.
- The U.S. stock market grew at 6.3% real compounded and never had a losing 20 year period. This compared to an average growth of 5.4% for other developed countries with only 3 providing all positive 20 year holding periods.
- U.S. stocks compounded at a higher rate than all but 3 other countries.
- U.S. stocks had lower volatility of returns than all but 4 other countries.
- Australia was the only country that had both lower volatility and higher returns than the U.S.
- U.S. bonds had higher real compound returns than all but 3 other countries and lower bond volatility than all but 2 countries.
- Only Switzerland had both higher bond returns and lower bond volatility than the U.S.
- Only 2 countries experienced lower compound annual inflation than the U.S.

Because the U.S. enjoyed the highest returns with lowest volatility for stocks, bonds, bills and inflation, it's simple math to conclude any research into safe

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withdrawal rates based on this data would likely provide some of the most optimistic outcomes of any data set.

This isn't opinion. It is just the way the math works. It's a fact.

The U.S. led a charmed existence with all the right connections and resources to bubble to the top of the economic heap.

Her experience is not representative of the rest of the world, and it's highly questionable the U.S. will repeat her performance during [your retirement](#) for many reasons including the following:

- Interest rates (as of this writing) are below U.S. historical averages, dividend yields are below historical averages, and P/E ratios are above historical averages. All of these facts imply less than average investment returns (see next section on valuation models).
- The last 100 years were built on cheap oil and plentiful natural resources. The U.S. used a disproportionate share of those resources to fuel its economic growth and consumption demands. Maybe technology will solve these problems, or maybe natural resource limitations will inhibit overall economic growth.
- The U.S. also enjoyed a stable political environment with no destructive wars on its soil compared to its developed competitors.
- The world economy has become more homogenized. The degrees of separation have diminished. U.S. companies sell and manufacturer world-wide while their competitors do the same. It's truly a global economy in ways that didn't exist historically.
- U.S. debt levels have ballooned by every measure compared to economic history placing a serious question mark around the stable inflation assumption of the past.

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Are you willing to bet your financial security on the charmed economic stats of the prom queen when she was in her prime compared to how the world is a changed place today?

Should you bet on the prom queen returning to the podium or is it more realistic to expect some kind of mean reversion that could lower asset returns to average expectations?

This is more than a cute analogy. Your [financial security in retirement](#) depends on it.

Wade Pfau ([source for much of the data cited above](#)) was the first to put this idea to the test.

He applied a research methodology similar to Bengen but with the critical change of using historical international data instead of U.S. data.

The results were alarmingly different.

In other words, similar methodology as 2nd Generation models + different data = dramatically different conclusions.

Using 109 years of data for each of 17 different developed countries, Pfau determined that a 4% withdrawal rate with a fixed 50/50 asset allocation would have failed in all 17 countries. **Yes, a 100% failure rate.**

You would have run out of money before you ran out of life using the conventional assumptions on foreign country data.

Ouch!

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**Lesson Learned:** The 2nd Generation models used to prove the 4% Rule showed a surprising failure rate when applied to international data. Basing your retirement expectation on results from U.S. data alone is the economic equivalent of basing your expectations for the High School Prom on the prior 10 years prom queen's experience. It is overoptimistic. This can be proven either by comparing U.S. economic statistics to the rest of the world or by actually running the models on the actual asset price data. They both point to the same conclusion – if you bet your retirement on becoming the prom queen you stand a good chance of being disappointed.

## The Dramatic Impact of Sequencing of Returns on Safe Withdrawal Rates

In the last section, you learned the critical role that data assumptions play in safe withdrawal rates by seeing how international data indicated a potentially lower return expectation than U.S. data.

In this section, you'll discover how safe withdrawal rates are actually dynamic – not static as commonly taught.

You'll learn how the sequencing of investment returns and inflation during your early retirement years will make or break your financial security.

The sequencing of returns problem is best illustrated in this example from William Bernstein:

Assume you have a [\\$1,000,000 portfolio](#) with an average return of 10% split evenly between 15 years at +30% and 15 years at -10%. This would give you a



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compound return of 8.17% (compound is less than average due to volatility effects).

More importantly, when you vary the returns sequences you get something truly shocking:

- If you are unlucky and start your retirement with 15 straight losing years you can only withdraw 1.86%. Same annual returns, same average return, different sequence of returns, different result.
- Conversely, if you are lucky enough to start your retirement with 15 straight winning years you can safely withdraw 24.86%.

These are astounding results!

Sequencing risk causes your safe withdrawal rates to vary from a low of 1.86% (in this example) to as high as 24.86%.

This variation is solely caused by the exact same returns occurring in a different order.

Nothing else changed. Amazing!

As shocking as these numbers are, it's really just common sense when you think about it.

Imagine 15 years of no net investment gain (not hard to do with the stock market's inflation adjusted performance since 2000), while still withdrawing 4% per year for spending.

Even without inflation adjustments, you would wipe out 60% of your account just in spending alone.

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When [you add inflation](#) and [investment losses](#) to the equation, the overall destruction to equity would be the retirement equivalent of death by strangulation.

By the way, this is not some strange statistical mumbo-jumbo that has no bearing on your retirement.

This is real-world stuff that is critical to your understanding.

It can make-or-break your financial security. Real people retired in 2000 applying the conventional 4% wisdom and destroyed their nest eggs in the process because of this exact problem. It's totally real.

Sequencing of returns risk is a huge factor in explaining why actual safe withdrawal rates on U.S. historical data vary from the 3% range at the low end to over 10% at the high end (depending on assumptions and the date chosen to begin retirement).

Sequence of returns is determined by the date you retire, cannot be known in advance, and will be one of the most significant factors affecting your [financial security in retirement](#).

It's a big deal.

The truth is safe withdrawal rates are all over the map depending on what date you retire and what happens to your [investment returns](#) in the early years of your retirement.

Pfau (2010) concludes that retirement success is highly dependent upon early investment returns showing that wealth remaining after 10 years of

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retirement combined with cumulative inflation during those 10 years explains 80% of the variation in safe withdrawal rates. This is very similar to Bernstein above.

The importance of this issue cannot be overstated.

The problem is your next 10 years investment returns are unknowable. You don't get to know the sequence of returns until after the fact.

The future can't be predicted with any accuracy (and it certainly isn't dependent on the last 100+ years of U.S. average historical data!).

**Lesson Learned:** Your real safe withdrawal rate for 30 years is highly dependent on the first 10 year's sequence of returns and inflation rate. [One size does not fit all](#). The 4% conventional wisdom is a static, least-common-denominator approximation, but actual safe withdrawal rates are highly variable. It is one reason why retirees in 1921, 1966, and 2010 face such dramatically different safe withdrawal rates.

What's a near-retiree to do? As it turns out, all is not lost. There are answers provided in the next section below.

(But they are not the same as conventional wisdom would lead you to believe!)

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## Market Valuations and Safe Withdrawal Rates

2nd Generation research assumed all time periods were equal regardless of market valuations, [interest rates](#), and [inflation](#).

According to conventional wisdom a retiree in 1921, 1966, and 2010 should all withdraw the same percentage of savings even though history proves this assertion is patently false (with perfect hindsight, of course).

3rd Generation research concludes differently by attempting to show that safe withdrawal rates vary widely depending on economic conditions on the date of retirement.

Let's set the stage for this argument with the obvious logic first. Everyone intuitively understands that [investment returns](#) are a primary determinant of safe withdrawal rates.

The more your portfolio earns during retirement the more you can afford to spend during retirement. That much is clear.

The argument isn't whether investment returns affect safe withdrawal rates. Everyone agrees that's true.

The problem is guesstimating what investment returns will be since you only know in hindsight and your withdrawal rate must be chosen in advance. *That's* the problem.

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This problem is why 2nd Generation models chose to define the highest withdrawal rate that could survive all historical data periods.

The assumption was the best and worst performing periods couldn't be determined in advance so the only safe choice was the lowest common denominator that survived all time periods.

Fortunately, that assumption is false. [Future investment returns](#) are not "luck" or random as many would guess.

As it turns out, market valuations at the time you begin your investment holding period are inversely correlated to the return you can expect over the following 10-15 years.

Notice how this 10-15 year time period is identical to the critical time period identified by Pfau in the research on sequencing of returns risk cited earlier. That's no coincidence.

Campbell and Shiller (1998), [Hussman](#), [Easterling](#), and many others have documented the effect of valuations on subsequent investment returns. It's a well known phenomenon that's valid across data samples and is something you can apply in [your own retirement planning](#).

Is it statistically perfect? No, nothing is. Is it robust enough for me to bet my own retirement on it? Absolutely yes!

The implications are startling. It means the 2nd Generation safe withdrawal rate models were well intentioned but somewhat misguided.

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Retirees don't need to know the historical “least common denominator” withdrawal rate that survived most data samples (as the 2nd Generation models taught).

They need to know the forward-looking [investment expectation](#) given the actual data that exists on the day their retirement begins (which is what 3rd Generation models teach).

These are completely different questions.

[Michael Kitces](#) considered the valuation effect alone by testing both optimal asset allocations and safe withdrawal rates based on Shiller's P/E 10.

He concluded 4.5% for P/E 10 above 20, 5.0% when P/E 10 is between 12 and 20, and 5.5% when P/E 10 is below 12 were all safe.

These are not revolutionary variations from the conventional 4% Rule, but they point a clear direction: **valuations matter**.

In other words, the higher the market valuation, the lower the safe withdrawal rate. Rob Arnott (2004) asserted similarly that sustainable withdrawal rates are not a fixed number but evolve with changing market conditions.

Similarly, [Rob Bennett provides a safe withdrawal calculator](#) based on regression analysis by John W. Russell that varies output using valuations at the start of your retirement.

The key difference between Bennett and Kitces, however, is Bennet's conclusions are more dramatic with a safe withdrawal rate at the 2000 peak in market valuations using a large allocation to stocks of only 2%.

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This is half of what conventional wisdom would claim. Yikes!

More recently, [Wade Pfau](#) created a robust model using regression analysis and 3 valuation metrics – PE 10 (price divided by average real earnings for previous 10 years), dividend yield (dividends divided by stock price), and interest rates (on 10 year government bonds) – to explain variation in safe withdrawal rates across time periods reasonably well.

It wasn't perfect, but most of the results were within 1% of being accurate (which is far more accurate and informative than blindly following historical averages).

For example, our theoretical retiree in 1921 enjoyed an astounding 10.42% safe withdrawal rate largely because of historically low market valuations when he retired.

Our 1966 retiree faced a difficult future with high valuations and [rising inflation](#) causing a 3.53% safe withdrawal rate. This is a difference of 3 times the spending capacity from the same nest egg simply because of the date you retired!

And if that isn't shocking enough, our 2010 retiree is looking at a 1.8% safe withdrawal rate according to Pfau's research.

No, 1.8% isn't not a misprint. But it sure is far below the conventional wisdom of 4% based on historical research.

It's caused by the one-two combination punch of persistently overvalued markets and razor thin interest rates that simply don't exist in the historical data.



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What this means is 2010 retirees have serious cause for concern when you consider a healthy couple at 65 has decent odds of one spouse outliving the 30 year lifespan assumption.

And don't forget, none of the models thus far include administrative or transaction fees (both of these issues are explained in detail below, and they both lower the safe withdrawal rate even further).

Suffice it to say, 2010 is a tough year to begin retirement. The conventional "wisdom" could dangerously mislead you to overspend, which would put you at risk of running out of money long before you run out of life.

**Lesson Learned:** Safe withdrawal rates vary with market valuations, interest rates, and inflation at the time you begin retirement. This connects to the previous lesson because valuations are a strong indicator of subsequent 10-15 year investment performance. When you put these two facts together you have a dynamic model that is more accurate and can be adjusted based on your actual retirement situation.

The safe withdrawal rate you must use is not a fixed number like conventional wisdom claims that can be neatly packaged into a simple rule-of-thumb.

It's not the same across all time periods in all conditions. One size does not fit all.

It's a dynamic number dependent on economic conditions and asset valuations prevailing at the time you retire. This is completely contrary to the static 4% rule taught elsewhere.

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## The Understated Problem with Inflation

In the previous section, we discovered how our 1921 and 2010 retirees faced a more than 5 fold difference in expected safe withdrawal rates because of market valuations and interest rates.

In this section, we look at our 1966 retiree to learn how inflation affects safe withdrawal rates so we can begin assembling a more complete picture.

The key concept to understand about inflation is how it multiplies its pain in two ways through [retirement income planning](#)

1. First off, withdrawal amounts are adjusted annually to reflect cumulative inflation. This forces a progressively larger annual withdrawal from savings to maintain real purchasing power which progressively taxes your savings.
2. Secondly, periods of high inflation are correlated with lower asset returns (see [Unexpected Returns: Understanding Secular Stock Market Cycles](#)).

The combined effect is to increase your annual withdrawals from savings while simultaneously reducing your investment returns.

This is a very difficult situation for any retiree to face.

It's the worst of both worlds all at one time, because your retirement savings are getting squeezed from both ends simultaneously.

The best historical example illustrating the [ravages of inflation](#) included the period from 1966-1996.

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Surprisingly, it was harder on new retirees than the Great Depression.

Inflation caused the annual withdrawal amount to rise from 4% to above 10% of savings within 15 years of retiring.

This also coincided with a nominal return on the S&P 500 of 6.81% roughly equaling the inflation rate and putting the real return at roughly zero.

Numbers like these are unsustainable and spell financial destruction.

The only reason these retirees survived was because Paul Volcker wrenched down inflation thus setting off one of the greatest bull markets in history beginning in 1982.

The subsequent [outsized investment returns](#) offset the outrageously high withdrawal rate that had been caused by inflation in the preceding 15 years, thus bailing out a near-death experience for 1960s retirees.

Consider the 1960s a warning shot over the bow because the next round of inflation may not end so gracefully.

Men of Paul Volcker's caliber seem in short supply these days, and record breaking bull markets, by definition, are extremely rare occurrences and should not be relied upon to repeat.

The other insidious fact about inflation is that it's not predictable. PhD economists routinely miss their forecasts just one year into the future.

The idea of a 30+ year inflation forecast (the duration of your retirement) is an absurd joke.

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In short, inflation is an incredibly dangerous beast: it can't be forecast accurately and it multiplies your spending while reducing average investment returns.

**Lesson Learned:** Taking inflation adjusted withdrawals over a 30 year period is only realistic in a stable inflation environment otherwise your withdrawal rate grows to an unsustainably large percentage of savings. The bulk of U.S. economic history has seen stable inflation so there is little historical precedent to judge the seriousness of the problem. Foreign history includes bouts of inflation and the effects indicate safe withdrawal rates below 4%. Given the unprecedented government debt levels you should carefully reconsider any safe withdrawal rate that blindly increases spending during inflation.

## How a Long, Healthy Life Is a Financial Problem

Longevity is a key idea when spending principal from savings (as most safe withdrawal research assumes).

Research shows (based on U.S. historical data – see above caveats) that safe withdrawal rates for 10 year retirements approach 10%. 20-25 year retirements push 5% and 30 years or more dip under 4%.

The rule is simple: the longer your money has to last, the lower the percentage you must withdraw.

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It's inherent in the mathematics of amortizing a fixed pool of capital – in this case, your savings.

Now that we know the math, let's look at the problem: **people are living longer.**

Remember our 1921 retiree? He had a life expectancy of little more than 65 years.

When Social Security was created they set the retirement age at average life expectancy. It was never intended to fund 30+ year retirements.

Since that time, average life expectancy has increased by roughly 1/3 of a year for every year thus increasing by 30 years in the last 100.

Our 1921 retiree didn't need a lot of savings because he could spend a large chunk of principal every year. Our 2010 retiree doesn't have that luxury.

Today, a healthy couple retiring at 65 has a good probability of at least one spouse living into their 90s.

That means today's retirees must budget for 30+ years and be extremely careful about any strategy that amortizes their savings by spending principal.

Additionally, this average life expectancy is a moving target expected to increase by the time your date with destiny arrives.

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If history provides any guide, it's reasonable to expect the average to rise another 10 years over the next 30 moving our 2010 retiree into a 100+ year lifespan.

This may sound extreme, but with developments in biotechnology and nanotechnology, it may actually prove to be a conservative estimate.

Finally, understand that all this discussion is about averages, but half the population outlives the averages.

Already the 95% confidence interval life expectancy is over 100 years (and rising).

The risk has never been higher that you could outlive your savings. Extremely long retirements exceeding 30+ years are entirely reasonable to plan for; yet, all safe withdrawal research to date is based on the premise that you spend your assets to zero at 30 years. Yikes!

This could be very dangerous.

For many people this assumption could cause you to run out of money long before you run out of life.

**Lesson Learned:** Both 2nd and 3rd Generation research into safe withdrawal rates has assumed 30 year retirements as the maximum. Trends in human longevity and developments in medicine make that a dubious assumption at best and dangerous at worst. The longer your life expectancy the lower percentage you can withdraw from savings.

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The bottom line is a safe withdrawal rate that spends principal is an oxymoron when longevity expands beyond 30+ years. Any spending of principal is not safe over very long time periods.

You should adjust your investment strategy and withdrawal rate accordingly.

## The Zero Fees and Expenses Assumption

How many of you invest with zero fees and expenses?

Not too many hands raised...

Amazing, then, that most safe withdrawal rate research supporting the consensus 4% rule assumes zero fees and expenses.

This is another example of an assumption made for the purpose of expediency in research, but having no real-world application.

Real-world withdrawal rates must be reduced compared to theoretical research to reflect [real-world investment management](#) and transaction expenses.

This issue may seem small, but it is not.

Imagine you've invested your portfolio with an adviser who charges 1% management fees while investing in mutual funds with 1-2% total expense ratios.



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That is 2-3% of annual expenses when compared to a 4% withdrawal rate. The difference is huge.

Fortunately, you don't have to subtract the expenses directly from the theoretical withdrawal rate because the math doesn't work that way. (It's a common mistake.)

Instead, you subtract expenses from the investment return first and then calculate the sustainable withdrawal rate.

The reduction in withdrawal rate is significantly less than the actual expenses.

For example, Pfau adjusted his 3<sup>rd</sup> Generation research results for administrative fees of 1.6% for stocks and 1.2% for bonds (similar to recent Morningstar averages).

After he did so, he reduced his safe withdrawal rate by only .66 percentage points – far less than the nominal expenses.

**Lesson Learned:** If you invest in low cost ETF's without additional advisory fees then you may be able to ignore the investment expense issue since its impact should be limited. However, if you invest with an advisor in expensive mutual funds then this issue is a serious consideration that could reduce the amount you can withdraw each month by 10-20%. It is an important issue to consider that few advisors will explain to you... for obvious reasons. [Learn more here...](#)

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## Humans Are Rational... Sort Of!

The final 2nd Generation research assumption built into the 4% Rule that makes no sense is the idea that you withdraw a fixed percentage of your savings adjusted for inflation (but nothing else) each and every year.

This is nonsense! Nobody lives this way.

In real life we adjust our spending based on the success or failure of our careers and the income they produce. Why should retirement be any different?

If your assets got hammered by inflation and bad investment performance during the first 10 years of retirement, causing the percent withdrawal to rise above 10%, are you going to march like a lemming to the cliff of financial destruction?

Of course not! That would be foolish.

You would reduce your spending based on adverse circumstances in your early years of retirement.

It's the prudent, common-sense thing to do (but it is not included in the research because it's difficult to model).

Similarly, do retirees consistently spend more each year as they get older? No, quite the opposite occurs. Retirees reduce spending as they age.

Why, then, do safe withdrawal models plan for ever increasing spending? It's not how real retirees manage their money.

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The point is that a 4% withdrawal rate on the first year of retirement that is adjusted every year for inflation has no real world applicability. It's a fiction of academic research.

Real world retirees increase spending when their assets have a good run and cut back spending when assets get clobbered.

They spend more in the early years of their retirement when their health is strong and world travel beckons, and they reduce spending as their energy and health decline with age.

Flexible spending opens up many possibilities not modeled in the 2nd Generation research:

- You could spend more in your early years and then reduce spending (or forego inflation increases) in later years when you don't need as much money.
- You could spend more in the early years and ratchet your spending down if you are unfortunate enough to endure an adverse returns sequence in the first 10 years.
- You could start at 4% and increase spending if your first 10 years enjoy high investment returns and/or low [inflation](#).

These are just three of many possible variations on how to approach withdrawing money.

The bottom line is you don't have to be a lemming and mindlessly follow the 4% rule into a financial abyss.

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Such blind obedience could leave a fortune on the table or risk unnecessary financial ruin. Instead, be smart and adjust your spending based on the actual results you experience.

It's just common sense.

**Lesson Learned:** There are many possible spending alternatives that offer real-world practical solutions to the fixed academic model of blindly increasing withdrawals based on inflation each and every year. You can't determine the risk of ruin for rational retirees from a model based on irrational behavior.

Risk of ruin is just as dependent on retiree behavior as it is on market dynamics – something not considered by the research and certainly ignored by the 4% rule. You must remain flexible during retirement and use your brain.

Correct and adjust your spending based on the growth or decline of your portfolio. Be rational and your risk of running out of money will be reduced.

## Putting It All Together

We've covered a lot of ground by examining the 3 generations of safe withdrawal rate research and the various problems associated with the 2nd Generation safe withdrawal models.

The reason I focused on the 2nd Generation model is because it has been elevated to the status of "truth" in the financial planning industry.

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The 4% Rule is quoted regularly in the financial media and used as a benchmark by which all other [retirement planning](#) models are compared.

The problem is it's not really safe. The 4% rule could cause you to leave a fortune on the table or run out of money long before you die. The 4% rule is a static conclusion in a world that is dynamically evolving.

In summary, there are specific assumptions built into the research supporting the 4% model that must be seriously questioned:

- 4% safe withdrawal rates are based entirely on U.S. investment data covering a time period when the U.S. was the prom queen of the economic world. Research by Pfau on long-term international data shows U.S. results optimistically on the high side of world estimates, and found material risk of failure when the same model was applied to international data.
- 4% safe withdrawal rates fail to account for rational retiree behavior in response to adverse (or positive) returns sequences.
- 4% safe withdrawal rates are a least-common-denominator approach to finding a static answer. In other words, the 4% Rule is the highest withdrawal rate that survived most data, but that doesn't mean it is the highest withdrawal rate that might be safe for your situation. It doesn't take into account market valuations, interest rates, or inflation at the time you retire. Wade Pfau demonstrated such factors can provide dramatically different safe withdrawal rates (both higher and lower) when compared to the 4% rule.
- 4% rule cannot account for out of sample data. This was first identified by Wade Pfau using international data and surfaced again in regression analysis on the record breaking market overvaluation and low interest rates of the last 10 years. Both situations produced expected safe withdrawal rates well below 4%. In addition, it can't

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possibly account for the potential for out-of-sample inflation that might occur in the future due to government financial mismanagement and excessive debt levels. Don't believe that 100+ years of U.S. economic history is as bad as it can get. The past isn't the future.

- 4% safe withdrawal rates usually exclude investment management fees and transactions costs. This is not a big deal if you self-manage your portfolio using low cost ETF's but is a very big deal if you use professional advisors and invest in mutual funds. Adjust accordingly.
- 4% safe withdrawal rates assume 30 year life expectancy. The problem is average life expectancies hold no relevance for your particular date with destiny. You could live much longer. In addition, a 95% confidence interval for a healthy couple at 65 pushes the number beyond 30 years, and increasing longevity combined with medical research breakthroughs can extend this number even further. Budgeting for 30 years may cause you to run out of money before you run out of life.
- 4% safe withdrawal rates assume conventional asset allocation [to U.S. stocks](#) and bonds and cannot be extrapolated to include less conventional investment approaches. [Skill based investment strategies \(active management\)](#), commodities, TIPs, and [real estate](#) can imply dramatically different conclusions.
- 4% safe withdrawal rates assume irrational retiree behavior. A rational retiree who adjusts spending based on actual results can significantly decrease his risk of ruin – even at higher initial withdrawal rates.

The truth is your actual safe withdrawal rate will likely be very different from the 4% rule depending on when you retire, your spending patterns, and your [investment strategy](#).

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The 4% rule is promoted as a one-size-fits all answer to the question of “how much can you spend in retirement?” Unfortunately, the exact opposite is true.

The answer is dynamic – not fixed. It is dependent on all the factors discussed above.

One size fits all is naïve and dangerous.

Don't believe it... even if it is conventional wisdom.

## Conclusion...

So what should a retiree do? If the 4% rule isn't the answer, then what is?

Unfortunately, no simple “plug-and-play” model has surfaced to replace the 4% rule (which probably explains why it has persisted despite inaccuracy).

Below I will provide you with a four step process to serve as a guideline in determining a reasonable approximation for a safe withdrawal rate.

It includes various adjustments you can make to determine a reasonable withdrawal rate for your retirement situation.

**Longevity:** Decide first how long you need your money to last. I'm personally budgeting for a 100+ year lifespan because anything less is financially risky (see longevity assumption above).



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When your retirement time horizon extends to 30+ years then spending principal isn't safe. As your time horizon shortens (i.e. you get older) then spending principal becomes viable again.

Build these facts into your safe withdrawal rate.

**Market Valuations:** The next step is to assess market valuations at the time you retire to determine if you are in a high risk or low risk period. (You can reference [Wade Pfau's research](#) or [Rob Bennett's calculator](#) for benchmarks.)

In periods of record high market valuations, the low safe withdrawal rate (under 4%) indicated by 3rd Generation research may make alternative asset mixes to the traditional stock/bond portfolio at least temporarily prudent and allow a higher withdrawal rate.

For example, during periods of high asset valuation you might consider...

- Limiting your spending to the premium over inflation on Treasury Inflation protected securities.
- Investing in inflation adjusted fixed annuities and leave the worry to the insurance companies.
- Limiting your spending to the dividend income from an internationally [diversified dividend stock portfolio](#).
- Or you can choose to invest in alternative assets that aren't governed by the same investment return limitations as traditional paper assets. For example, some retirees live off the positive cash flow from [directly owned real estate](#).

Conversely, in periods of low market valuations you may be able to prudently increase your withdrawal rate above the 4% rule and allocate a higher percentage to stocks.

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In summary, the second step is to assess the risk level inherent in market valuations so you can decide an appropriate asset mix and withdrawal rate given your longevity expectation and the economic environment.

**Refine:** Now that you have a benchmark withdrawal rate consider subtracting for other factors discussed above.

For example, if you pay investment adviser fees and invest in high cost mutual funds then, you may want to reduce your withdrawal rate accordingly. The same with other assumptions described above that fit your situation.

**Correct And Adjust:** Once you've [picked your investment strategy](#) and withdrawal rate, don't make the mistake of setting it and forgetting it.

Remember that 3rd Generation research by Wade Pfau showed how the bulk of your financial "blow-up" risk is determined by the sequence of returns and [inflation](#) during the first 10 years.

You may need to adjust your strategy based on actual results. You certainly shouldn't blindly increase the amount you spend every year by the inflation rate as the 4% rule would indicate.

Revisit you plan every few years so that you never spend too large a percentage of your savings in any one year regardless of what the research tells you.

You may even want to consider employing some alternative spending models:

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- You can replace the “4% rule” with the “3% rule” during times of excessive market valuations thus increasing your safety... but lowering your income.
- You can eliminate or reduce the annual inflation adjustment factor so that your spending is fixed in nominal terms, but declines in real terms as you age (something most retirees do naturally anyway). One idea to consider is only increasing your spending by inflation during years when your portfolio grows in value.
- You can change your withdrawal strategy to a fixed percentage of principal which virtually eliminates risk of failure, but causes variability in income based on portfolio fluctuations. As your assets rise you will withdraw more, and as your assets fall you will withdraw less. Whether or not your spending keeps up with inflation would be determined by the growth of your assets.

The key point is to [use common sense](#).

That means use the research and [calculators](#) as guidelines only. Don't apply static models based on blind faith just because they have become conventional wisdom and everyone says they are true.

Your retirement is too important to incur that much risk.

[Your retirement](#) will be different from your grandfather's. Your expected longevity has made any strategy that spends principal in the early years questionable.

Financial markets are more volatile and interest rates are at record lows making fixed stock/bond allocations questionable.

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In addition, inflation could look completely different from historic norms due to unprecedented government debt levels.

In short, the premise that all 2nd Generation research is based upon – that the future should be no worse than the past 100+ years of U.S. economic history – is extremely dangerous.

Already the last 20 years has produced a period of record market overvaluations and low interest rates not seen in the historical data.

This produced a theoretical safe withdrawal rate less than half that indicated by the 4% rule.

Never mind the possibility of out of sample inflation in the future making things even worse.

Don't blindly trust something as important as your retirement security to computer models.

No one has a Crystal Ball (least of all economic researchers) and that is why you have to use your brain and not rely on oversimplified rules-of-thumb.

They are useful guidelines to teach important principles, but they aren't scripture set in stone.

Hopefully the 4 step model outlined here, while admittedly more complex, will help you navigate the journey and find [fulfillment and financial security](#) in your retirement.