

## Chapter 10: Don't Die Broke! Additional Material

Chapter 10 of *Live Long & Prosper!* describes a sophisticated computer simulation technique, called asset/liability modeling (ALM), that Watson Wyatt uses to help large corporations make decisions on asset allocation for their pension plans. Here we use ALM to develop simple formulas and strategies for withdrawing from our 401(k) plans, such that we minimize the chance of outliving our money. We calculate the risk (outliving our money) and the estimated amount of our 401(k) balance at death that are associated with various asset allocation and withdrawal strategies.

We use these formulas and strategies for the 401(k) Solution, as described in Chapter 10 of *Live Long & Prosper!*, where we draw down investment earnings and principal. If we just withdraw investment earnings, we don't have any risk of outliving our principal. In Chapter 10, I called this the Income Solution.

Here I provide more details on the 401(k) Solution, if you want to know more, or if you want to refine your 401(k) withdrawal strategies. Adam Levine, a consultant with Watson Wyatt, prepared the tables that follow, which show the results of our analyses.

Each page covers a specific situation. For example, the first page shows tables for various withdrawal and asset allocation strategies for a single male whose 401(k) balance is \$500,000, and he begins making withdrawals at age 50. The subsequent tables increase the age in 5 year increments, and include analyses for single females.

These tables show the results for various withdrawal and asset allocation strategies. I show the results if we withdraw 3% per year, 4%, 5% and so on, up to 10% per year. In each case, I assume that we withdraw the specified percentage of our beginning balance, and then give ourselves increases for inflation each year thereafter. For each withdrawal percentage, I show the results for three different asset allocation strategies: 35% equities, 50% equities, and 65% equities.

For each combination of withdrawal percentages and asset allocations, I show the projected asset values at death for different 'percentiles' – 5<sup>th</sup> percentile pessimistic, 25<sup>th</sup> percentile pessimistic, 50<sup>th</sup> percentile, 25<sup>th</sup> percentile optimistic, and 5<sup>th</sup> percentile optimistic. Let me explain what these labels mean.

- 5<sup>th</sup> percentile pessimistic is for an unlikely, pessimistic outcome. This means that the odds are 5% that the projected asset amounts will be equal to or less than the result shown in the table. 5% is one out of 20.
- 25<sup>th</sup> percentile pessimistic is for a somewhat likely, pessimistic outcome. This means that the odds are 25% that the projected asset amounts will be equal to or less than the result shown in the table. 25% is one out of four.
- 50<sup>th</sup> percentile is for a 'most likely' outcome. This means that the odds are 50% that the projected asset amounts will be greater than the amount shown in the table, and a 50% chance they will be less than the amount shown.
- 25<sup>th</sup> percentile optimistic is for a somewhat likely, optimistic outcome. This means that the odds are 25% that the projected asset amounts will be equal to or greater than the result shown in the table.
- 5<sup>th</sup> percentile optimistic is for an unlikely, optimistic outcome. This means that the odds are 5% that the projected asset amounts will be equal to or greater than the result shown in the table.

Each table also shows the odds that we won't die broke – that we won't outlive our assets.

To better understand these tables, let's take a look at the first page, for a 50 year-old male.

Let's start with a 3% withdrawal strategy, with a 50/50 asset allocation. In the first year, he withdraws 3% of \$500,000, or \$15,000. He gives himself increases equal to the inflation rate for

each year thereafter. The tables show the following estimates of the assets remaining at death, from his original balance of \$500,000.

- There's a 5% chance that the remaining 401(k) balance at death will be \$52,497 or less.
- There's a 25% chance that the 401(k) balance at death will be \$173,455 or less.
- There's a 50% chance that the balance will be greater than \$312,130, and an equal 50% chance it will be less than \$312,130.
- There's a 25% chance that the balance will be \$568,661 or greater.
- There's a 5% chance that the balance will be \$1,245,988 or greater.
- The odds are 97% that he won't outlive his money. Stated another way, the odds are 3% that he will outlive his money, about one out of 33.

Now suppose he withdraws 4% of his beginning balance of \$500,000, instead of 3%. In the first year, he withdraws \$20,000, and adjusts it for inflation thereafter.

- A zero result means there's at least a 5% chance that he outlives his money.
- There's a 25% chance that the remaining 401(k) balance at death will be \$91,348 or less.
- There's a 50% chance that the balance will be greater than \$193,088, and a 50% chance it will be less than \$193,088.
- There's a 25% chance that the balance will be \$384,068 or greater.
- There's a 5% chance that the balance will be \$919,861 or greater.

- The odds are 88% that he won't outlive his money. Stated another way, the odds are 12% that he will outlive his money – a little more than 1 out of 10.

Let's do this one more time, and suppose he withdraws 5% of his beginning balance of \$500,000, instead of 4%. In the first year, he withdraws \$25,000, and adjusts it for inflation thereafter.

- A zero result means there's at least a 5% and 25% chance that he outlives his money.
- There's a 50% chance that the remaining balance will be greater than \$104,213, and a 50% chance it will be less than \$104,213.
- There's a 25% chance that the balance will be \$241,128 or greater.
- There's a 5% chance that the balance will be \$657,725 or greater.
- The odds are 72% that he won't outlive his money. Stated another way, the odds are 28% that he will outlive his money – a little more than 1 out of 4.

Let's make a few observations.

- Note the wide range in estimated remaining balances among the various percentiles. This reflects the variety of possible future outcomes. Basically, that's life!
- The range gets bigger as we increase our asset allocation to stocks. This reflects that we will have more variability in our future accounts if we increase our allocation to stocks – this demonstrates the risk. On the other hand, the 50/50 results and optimistic results are higher for the higher allocations in stocks. This demonstrates the reward.
- The higher the withdrawal percentage, the more likely it is that we will outlive our money.
- For the higher withdrawal percentages, often we have better odds for outliving our money with the higher asset allocations to stocks. The reason is that if we make high withdrawals

and have associated inflation increases on them, we have better odds of funding these withdrawals through stock market returns. However, what I didn't show was that with the pessimistic scenarios, we run out of money sooner than with lower allocations to stocks. This shows the delicate balance between withdrawal and asset allocation strategies.

We can use these tables for beginning balances other than \$500,000. For example, if we start with \$100,000 instead of \$500,000, then with a 3% withdrawal rate, we will be withdrawing \$3,000 in the first year. The odds that we won't outlive our money remain the same as shown. We can estimate the remaining balances at death for the various percentiles by multiplying the results in the table by 0.2, which is the ratio of \$100,000/\$500,000.

We should keep in mind that ALM merely produces estimates that attempt to quantify uncertainty. We don't know what the future will hold, but we can make forecasts of different outcomes, and attach odds to each outcome. These outcomes and odds come from assumptions that we build from studying the past and reflecting current economic conditions. This is a fancy way of saying that a lot can happen in the future, if history repeats itself! If we really want to be safe, we look at the most pessimistic scenarios, and then adopt strategies such that we can survive these dire scenarios.

These analyses reinforce the thought that withdrawal and asset allocation strategies are part art, part science. In reality, we'll make some decisions and go with them for awhile. Then, we'll make adjustments to respond to events that unfold, both in the investment markets and with our living situation.

For example, here's one way to use these analyses to adjust our future withdrawals to reflect our experience as it unfolds, using a 'fresh start' approach. Normally, we determine a withdrawal amount with a corresponding chance of outliving our money that we are comfortable with at the time. Subsequently, we adjust the withdrawal amount by increasing it for inflation each year. Periodically, say every five years, we can do a reality check with this fresh start approach. We use this to see if the intervening experience has increased or decreased the odds of outliving our money.

Here's how it works. At some future year, we take the withdrawal amount as calculated for that year, and divide it by the 401(k) balance at that time. This determines our withdrawal percentage at that future time.

- Use the tables to see the chance of outliving our money, given our age at the time in the future. If the chance of outliving our money has decreased, compared to when we started making withdrawals, this means that we have received good investment returns, better than expected. In this case, if we need the money, we can increase our withdrawal amount to reflect this good turn of events.
- On the other hand, if the chance of outliving our money has increased, compared to when we started making withdrawals, this means that we have received poor investment returns, worse than expected. In this case, we can decrease our withdrawal amount to reflect this unfortunate turn of events, and improve the odds that we won't outlive our money.

Here's an example of how this can work.

Let's go back to the 50 year old male from above, who had a 50/50 asset allocation. Let's assume that he withdraws 4% of his beginning account balance of \$500,000. This means the withdrawal amount in the first year is \$20,000. The odds that he won't outlive his money are 88%. Stated another way, he has a 12% chance of outliving his money and dying broke.

Now let's suppose he does a fresh start calculation five years later. Let's further assume that he has increased his withdrawals for inflation, and that he would normally withdraw \$23,200 in the fifth year.

- Suppose his 401(k) balance at the beginning of the fifth year is \$464,000. Divide \$23,200 by \$464,000 for a result of 5%. Using the enclosed tables, we see that a 5% withdrawal rate for a 55 year-old has a 79% chance of not outliving his money. Stated another way, he has a 21% chance of outliving his money. The odds of dying broke have increased since age 50 when he started, when the odds were 12%. This is due to poor investment

returns since age 50. Suppose he reduces his withdrawal amount to 4% of his balance at the time, to \$18,560. He now has a 92% chance that he won't outlive his money, or an 8% chance of dying broke. Now he has improved his odds!

- Instead, suppose his 401(k) balance at the beginning of the fifth year is \$580,000. Divide \$23,200 by \$580,000 for a result of 4%. As noted above, a 4% withdrawal rate has an 8% chance of outliving his money. The odds of dying broke have slightly decreased since age 50 when he started, when the odds were 12%. This is due to good investment returns since age 50. He can keep his current withdrawal amount, feeling good that the odds of outliving his money have decreased a little. Or, if he needs the money, he can slightly increase his withdrawal amount, say to \$24,000, to reflect his good fortune.

Most of this example was fairly clean, with whole withdrawal percentages that correspond to entries in the enclosed tables. In reality, the withdrawal percentages as calculated using the fresh start approach will have fractions; in this case, you'll have to interpolate between the amounts shown. Again, this reflects that this part art, part science!

This document is intended to complement and reinforce the themes in *Live Long & Prosper!* I don't intend for it to make complete sense without reading the book.

***Good luck!***

Here's some necessary language that my lawyers think wise. While I have used my best efforts in preparing these analyses, I make no representations or warranties with respect to the accuracy or completeness of the contents of this document, and specifically disclaim any implied warranties of fitness for a specific purpose. The advice and strategies contained here may not be suitable for your situation. You should consult with a professional where appropriate. I will not be liable for any loss of profit or any other commercial damages, including but not limited to, special, incidental, consequential, or other damages.

### Projected Assets at Death Male Currently Age 50

	3% Withdrawal			4% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$56,501	\$52,497	\$35,576	\$0	\$0	\$0
25th percentile - pessimistic	\$145,732	\$173,455	\$193,105	\$63,748	\$91,348	\$103,797
50th percentile	\$227,173	\$312,130	\$407,718	\$131,060	\$193,088	\$269,623
25th percentile - optimistic	\$353,543	\$568,661	\$845,197	\$216,878	\$384,068	\$624,379
5th percentile - optimistic	\$636,664	\$1,245,988	\$2,291,708	\$430,629	\$919,861	\$1,801,503
Odds we don't die broke	98%	97%	96%	85%	88%	88%

	5% Withdrawal			6% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$0	\$0	\$1,664	\$0	\$0	\$0
50th percentile	\$55,115	\$104,213	\$150,384	\$0	\$18,844	\$68,761
25th percentile - optimistic	\$123,148	\$241,128	\$422,762	\$61,338	\$133,311	\$256,250
5th percentile - optimistic	\$273,889	\$657,725	\$1,380,510	\$156,402	\$446,704	\$1,003,838
Odds we don't die broke	64%	72%	75%	41%	53%	60%

	7% Withdrawal			8% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
50th percentile	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - optimistic	\$0	\$64,822	\$142,083	\$0	\$0	\$64,528
5th percentile - optimistic	\$100,887	\$268,765	\$735,206	\$73,643	\$151,943	\$457,768
Odds we don't die broke	24%	36%	46%	15%	24%	33%

	9% Withdrawal			10% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
50th percentile	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - optimistic	\$0	\$0	\$0	\$0	\$0	\$0
5th percentile - optimistic	\$47,397	\$96,444	\$276,271	\$26,709	\$66,959	\$154,212
Odds we don't die broke	10%	16%	24%	7%	11%	16%

### Projected Assets at Death Female Currently Age 50

	3% Withdrawal			4% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$33,633	\$34,994	\$17,439	\$0	\$0	\$0
25th percentile - pessimistic	\$150,842	\$182,075	\$207,199	\$46,622	\$82,378	\$101,047
50th percentile	\$241,135	\$349,788	\$472,999	\$130,423	\$201,345	\$295,577
25th percentile - optimistic	\$395,541	\$658,169	\$1,007,760	\$232,114	\$432,939	\$731,659
5th percentile - optimistic	\$766,892	\$1,541,189	\$2,850,909	\$509,909	\$1,153,809	\$2,295,404
Odds we don't die broke	96%	96%	96%	81%	85%	86%

	5% Withdrawal			6% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
50th percentile	\$38,433	\$97,067	\$154,582	\$0	\$0	\$54,431
25th percentile - optimistic	\$120,650	\$257,760	\$473,147	\$48,076	\$131,850	\$279,212
5th percentile - optimistic	\$301,895	\$808,981	\$1,791,325	\$158,806	\$535,172	\$1,334,691
Odds we don't die broke	59%	68%	72%	35%	49%	56%

	7% Withdrawal			8% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
50th percentile	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - optimistic	\$0	\$50,202	\$139,012	\$0	\$0	\$48,494
5th percentile - optimistic	\$94,573	\$295,828	\$919,390	\$62,561	\$149,378	\$579,280
Odds we don't die broke	20%	32%	42%	12%	20%	30%

	9% Withdrawal			10% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
50th percentile	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - optimistic	\$0	\$0	\$0	\$0	\$0	\$0
5th percentile - optimistic	\$33,309	\$89,596	\$302,121	\$4,443	\$53,264	\$143,100
Odds we don't die broke	8%	13%	21%	5%	8%	14%

### Projected Assets at Death Male Currently Age 55

	3% Withdrawal			4% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$82,335	\$74,003	\$60,904	\$0	\$0	\$0
25th percentile - pessimistic	\$137,187	\$153,593	\$165,473	\$83,010	\$98,452	\$107,813
50th percentile	\$195,687	\$251,395	\$311,344	\$128,896	\$173,182	\$220,214
25th percentile - optimistic	\$291,758	\$437,337	\$622,359	\$195,193	\$311,115	\$469,147
5th percentile - optimistic	\$506,014	\$901,924	\$1,524,208	\$356,468	\$695,711	\$1,218,974
Odds we don't die broke	99%	99%	98%	91%	92%	92%

	5% Withdrawal			6% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$0	\$23,504	\$41,363	\$0	\$0	\$0
50th percentile	\$77,761	\$110,217	\$144,149	\$12,831	\$55,130	\$88,716
25th percentile - optimistic	\$125,202	\$209,718	\$333,158	\$81,889	\$133,019	\$222,105
5th percentile - optimistic	\$236,842	\$515,945	\$987,927	\$152,682	\$359,065	\$746,328
Odds we don't die broke	74%	79%	81%	53%	62%	67%

	7% Withdrawal			8% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
50th percentile	\$0	\$0	\$26,960	\$0	\$0	\$0
25th percentile - optimistic	\$40,771	\$85,855	\$140,848	\$0	\$41,232	\$88,279
5th percentile - optimistic	\$108,495	\$235,280	\$540,046	\$86,602	\$156,951	\$374,293
Odds we don't die broke	36%	47%	55%	25%	34%	42%

	9% Withdrawal			10% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
50th percentile	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - optimistic	\$0	\$0	\$41,142	\$0	\$0	\$0
5th percentile - optimistic	\$71,925	\$106,611	\$243,085	\$58,114	\$84,847	\$157,558
Odds we don't die broke	17%	24%	32%	13%	17%	24%

### Projected Assets at Death Female Currently Age 55

	3% Withdrawal			4% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$71,122	\$64,442	\$46,979	\$0	\$0	\$0
25th percentile - pessimistic	\$140,503	\$162,393	\$178,707	\$72,738	\$94,319	\$105,159
50th percentile	\$211,602	\$284,731	\$364,002	\$129,119	\$182,348	\$244,462
25th percentile - optimistic	\$326,767	\$502,386	\$737,536	\$206,496	\$348,995	\$541,524
5th percentile - optimistic	\$588,814	\$1,109,200	\$1,943,827	\$399,110	\$827,777	\$1,562,760
Odds we don't die broke	98%	98%	97%	87%	90%	90%

	5% Withdrawal			6% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$0	\$0	\$21,626	\$0	\$0	\$0
50th percentile	\$66,251	\$107,222	\$147,219	\$0	\$36,810	\$80,684
25th percentile - optimistic	\$124,036	\$223,736	\$380,436	\$72,882	\$133,435	\$239,382
5th percentile - optimistic	\$257,316	\$594,621	\$1,211,444	\$153,434	\$397,131	\$877,534
Odds we don't die broke	68%	75%	78%	46%	57%	63%

	7% Withdrawal			8% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
50th percentile	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - optimistic	\$22,057	\$75,336	\$142,318	\$0	\$18,900	\$76,853
5th percentile - optimistic	\$104,418	\$249,322	\$608,127	\$80,565	\$151,454	\$405,483
Odds we don't die broke	30%	41%	49%	20%	28%	37%

	9% Withdrawal			10% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
50th percentile	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - optimistic	\$0	\$0	\$16,742	\$0	\$0	\$0
5th percentile - optimistic	\$63,038	\$101,142	\$252,171	\$46,023	\$76,641	\$155,929
Odds we don't die broke	14%	20%	27%	10%	14%	20%

### Projected Assets at Death Male Currently Age 60

	3% Withdrawal			4% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$89,529	\$82,737	\$71,270	\$3,266	\$5,238	\$0
25th percentile - pessimistic	\$129,200	\$137,519	\$144,709	\$91,572	\$100,000	\$105,114
50th percentile	\$172,694	\$208,456	\$245,669	\$125,562	\$156,458	\$189,137
25th percentile - optimistic	\$242,733	\$343,306	\$464,876	\$175,703	\$258,691	\$362,056
5th percentile - optimistic	\$405,941	\$673,296	\$1,075,704	\$295,417	\$530,487	\$878,236
Odds we don't die broke	99%	99%	99%	95%	95%	95%

	5% Withdrawal			6% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$37,426	\$54,831	\$66,266	\$0	\$0	\$5,352
50th percentile	\$89,517	\$111,726	\$136,223	\$47,515	\$75,470	\$97,992
25th percentile - optimistic	\$124,525	\$185,819	\$272,226	\$93,448	\$132,517	\$195,970
5th percentile - optimistic	\$207,355	\$401,763	\$707,980	\$147,193	\$289,463	\$548,768
Odds we don't die broke	84%	86%	87%	66%	72%	76%

	7% Withdrawal			8% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
50th percentile	\$0	\$31,712	\$57,283	\$0	\$0	\$10,072
25th percentile - optimistic	\$65,874	\$97,645	\$140,133	\$36,589	\$67,972	\$100,000
5th percentile - optimistic	\$113,642	\$210,408	\$411,133	\$98,756	\$151,914	\$307,311
Odds we don't die broke	50%	58%	64%	37%	45%	52%

	9% Withdrawal			10% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
50th percentile	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - optimistic	\$8,477	\$38,077	\$70,242	\$0	\$6,472	\$38,749
5th percentile - optimistic	\$87,487	\$116,864	\$216,106	\$78,996	\$100,000	\$157,841
Odds we don't die broke	27%	34%	41%	21%	27%	33%

### Projected Assets at Death Female Currently Age 60

	3% Withdrawal			4% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$86,231	\$78,674	\$63,908	\$0	\$0	\$0
25th percentile - pessimistic	\$133,219	\$144,946	\$153,916	\$87,426	\$99,353	\$105,656
50th percentile	\$185,317	\$231,311	\$278,760	\$126,528	\$164,542	\$204,430
25th percentile - optimistic	\$271,708	\$397,547	\$550,325	\$185,590	\$286,285	\$420,054
5th percentile - optimistic	\$467,903	\$822,157	\$1,349,766	\$331,221	\$618,072	\$1,074,381
Odds we don't die broke	99%	99%	98%	93%	93%	93%

	5% Withdrawal			6% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$12,624	\$37,509	\$54,128	\$0	\$0	\$0
50th percentile	\$84,575	\$110,770	\$140,529	\$30,297	\$65,870	\$93,310
25th percentile - optimistic	\$124,168	\$199,055	\$303,587	\$88,082	\$131,850	\$208,115
5th percentile - optimistic	\$225,855	\$460,820	\$863,925	\$149,851	\$324,998	\$664,368
Odds we don't die broke	78%	82%	84%	59%	66%	71%

	7% Withdrawal			8% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
50th percentile	\$0	\$6,828	\$40,760	\$0	\$0	\$0
25th percentile - optimistic	\$53,455	\$91,674	\$139,245	\$18,216	\$55,558	\$95,188
5th percentile - optimistic	\$110,923	\$224,506	\$488,125	\$93,521	\$153,879	\$339,840
Odds we don't die broke	42%	51%	58%	30%	38%	47%

	9% Withdrawal			10% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
50th percentile	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - optimistic	\$0	\$16,438	\$56,388	\$0	\$0	\$17,135
5th percentile - optimistic	\$81,449	\$111,869	\$233,399	\$70,317	\$92,633	\$156,157
Odds we don't die broke	22%	28%	36%	16%	21%	28%

### Projected Assets at Death Male Currently Age 65

	3% Withdrawal			4% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$91,503	\$84,881	\$77,188	\$43,308	\$41,938	\$33,898
25th percentile - pessimistic	\$120,855	\$125,671	\$128,840	\$96,009	\$100,709	\$103,580
50th percentile	\$155,517	\$178,334	\$200,683	\$122,055	\$142,213	\$162,613
25th percentile - optimistic	\$208,357	\$270,364	\$344,053	\$160,841	\$215,161	\$281,512
5th percentile - optimistic	\$331,130	\$511,141	\$765,390	\$251,397	\$407,874	\$636,347
Odds we don't die broke	100%	100%	99%	98%	98%	97%

	5% Withdrawal			6% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$62,973	\$73,637	\$79,017	\$15,991	\$33,572	\$43,459
50th percentile	\$97,503	\$113,092	\$129,441	\$70,963	\$88,677	\$102,538
25th percentile - optimistic	\$124,029	\$165,935	\$220,399	\$100,000	\$131,066	\$171,614
5th percentile - optimistic	\$190,774	\$320,093	\$525,297	\$144,857	\$252,081	\$428,247
Odds we don't die broke	91%	92%	92%	80%	82%	84%

	7% Withdrawal			8% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
50th percentile	\$39,437	\$61,935	\$78,444	\$5,954	\$28,662	\$49,218
25th percentile - optimistic	\$82,756	\$103,569	\$137,097	\$64,192	\$86,234	\$108,245
5th percentile - optimistic	\$118,437	\$192,089	\$333,969	\$103,104	\$151,454	\$257,239
Odds we don't die broke	65%	71%	74%	52%	59%	64%

	9% Withdrawal			10% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
50th percentile	\$0	\$0	\$16,419	\$0	\$0	\$0
25th percentile - optimistic	\$45,996	\$66,348	\$88,341	\$27,135	\$47,643	\$68,647
5th percentile - optimistic	\$97,005	\$122,510	\$198,680	\$91,466	\$104,430	\$157,558
Odds we don't die broke	41%	48%	54%	33%	39%	45%

### Projected Assets at Death Female Currently Age 65

	3% Withdrawal			4% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$89,894	\$83,161	\$73,019	\$20,607	\$22,471	\$14,907
25th percentile - pessimistic	\$125,255	\$131,847	\$136,353	\$94,113	\$100,332	\$104,356
50th percentile	\$164,075	\$193,055	\$223,464	\$123,421	\$148,146	\$175,134
25th percentile - optimistic	\$227,827	\$309,663	\$406,831	\$168,471	\$238,603	\$323,690
5th percentile - optimistic	\$377,426	\$610,300	\$929,906	\$276,359	\$482,451	\$774,882
Odds we don't die broke	100%	99%	99%	96%	96%	96%

	5% Withdrawal			6% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$48,325	\$64,482	\$72,072	\$0	\$9,833	\$24,226
50th percentile	\$93,681	\$112,435	\$132,713	\$59,153	\$83,077	\$100,108
25th percentile - optimistic	\$124,560	\$176,508	\$250,237	\$97,622	\$132,177	\$183,469
5th percentile - optimistic	\$197,766	\$375,819	\$624,576	\$146,458	\$277,841	\$493,470
Odds we don't die broke	87%	89%	89%	72%	77%	79%

	7% Withdrawal			8% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
50th percentile	\$19,154	\$46,719	\$67,841	\$0	\$4,897	\$30,409
25th percentile - optimistic	\$75,855	\$100,000	\$138,519	\$52,295	\$78,097	\$104,284
5th percentile - optimistic	\$115,905	\$201,029	\$387,519	\$100,000	\$150,800	\$286,982
Odds we don't die broke	56%	64%	68%	44%	51%	58%

	9% Withdrawal			10% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
50th percentile	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - optimistic	\$30,154	\$54,625	\$80,424	\$5,543	\$29,847	\$55,173
5th percentile - optimistic	\$92,948	\$119,835	\$204,687	\$85,520	\$100,644	\$155,906
Odds we don't die broke	34%	41%	47%	27%	32%	39%

### Projected Assets at Death Male Currently Age 70

	3% Withdrawal			4% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$92,297	\$86,370	\$80,523	\$64,449	\$60,643	\$53,557
25th percentile - pessimistic	\$112,749	\$114,254	\$115,192	\$98,677	\$100,000	\$100,513
50th percentile	\$139,234	\$153,907	\$168,027	\$117,624	\$130,893	\$143,486
25th percentile - optimistic	\$178,291	\$217,087	\$260,696	\$147,594	\$182,180	\$223,725
5th percentile - optimistic	\$269,929	\$389,208	\$548,529	\$216,722	\$325,111	\$468,863
Odds we don't die broke	100%	100%	100%	100%	99%	99%

	5% Withdrawal			6% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$16,136	\$18,862	\$14,126	\$0	\$0	\$0
25th percentile - pessimistic	\$78,773	\$84,244	\$86,550	\$50,854	\$59,655	\$65,733
50th percentile	\$100,000	\$110,659	\$122,171	\$84,453	\$96,210	\$103,541
25th percentile - optimistic	\$122,054	\$151,699	\$187,403	\$104,181	\$127,639	\$156,640
5th percentile - optimistic	\$174,246	\$267,035	\$399,765	\$141,520	\$218,006	\$333,441
Odds we don't die broke	96%	96%	96%	90%	91%	91%

	7% Withdrawal			8% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$17,350	\$31,070	\$38,123	\$0	\$0	\$6,538
50th percentile	\$65,476	\$79,894	\$90,303	\$44,745	\$60,973	\$73,444
25th percentile - optimistic	\$93,134	\$107,577	\$132,240	\$81,240	\$96,949	\$111,693
5th percentile - optimistic	\$121,766	\$175,959	\$269,973	\$108,135	\$146,992	\$220,863
Odds we don't die broke	81%	83%	85%	70%	74%	77%

	9% Withdrawal			10% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
50th percentile	\$22,847	\$39,125	\$54,284	\$1,532	\$17,174	\$32,208
25th percentile - optimistic	\$70,002	\$84,483	\$100,000	\$59,079	\$72,933	\$86,910
5th percentile - optimistic	\$100,000	\$126,688	\$181,669	\$100,000	\$111,118	\$153,614
Odds we don't die broke	59%	64%	68%	50%	56%	60%

## Projected Assets at Death Female Currently Age 70

	3% Withdrawal			4% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$91,905	\$85,389	\$78,569	\$53,483	\$48,427	\$41,197
25th percentile - pessimistic	\$116,629	\$120,189	\$122,099	\$97,467	\$100,236	\$102,057
50th percentile	\$149,065	\$168,790	\$187,645	\$120,374	\$137,904	\$154,992
25th percentile - optimistic	\$196,473	\$248,123	\$308,711	\$154,645	\$201,082	\$255,382
5th percentile - optimistic	\$311,320	\$465,293	\$684,374	\$239,919	\$374,645	\$559,240
Odds we don't die broke	100%	100%	100%	98%	98%	98%

	5% Withdrawal			6% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$69,854	\$77,785	\$82,316	\$31,097	\$45,377	\$53,796
50th percentile	\$99,409	\$112,463	\$126,265	\$77,211	\$92,240	\$103,041
25th percentile - optimistic	\$123,261	\$160,469	\$206,639	\$101,893	\$129,532	\$166,024
5th percentile - optimistic	\$185,566	\$299,580	\$460,802	\$144,032	\$240,655	\$379,417
Odds we don't die broke	93%	94%	94%	84%	86%	87%

	7% Withdrawal			8% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$0	\$3,430	\$14,795	\$0	\$0	\$0
50th percentile	\$50,912	\$69,952	\$84,548	\$22,773	\$43,205	\$60,789
25th percentile - optimistic	\$88,006	\$105,309	\$134,847	\$72,657	\$90,757	\$109,408
5th percentile - optimistic	\$119,429	\$186,331	\$312,674	\$105,527	\$148,946	\$244,151
Odds we don't die broke	71%	76%	78%	59%	65%	69%

	9% Withdrawal			10% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
50th percentile	\$0	\$13,733	\$32,905	\$0	\$0	\$2,126
25th percentile - optimistic	\$57,520	\$75,981	\$94,437	\$42,244	\$59,908	\$77,554
5th percentile - optimistic	\$100,000	\$123,929	\$189,500	\$96,241	\$108,330	\$155,745
Odds we don't die broke	48%	54%	59%	39%	45%	51%

## Projected Assets at Death Male Currently Age 75

	3% Withdrawal			4% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$91,958	\$86,283	\$80,669	\$76,427	\$72,433	\$65,765
25th percentile - pessimistic	\$107,346	\$107,651	\$107,294	\$99,459	\$100,000	\$100,000
50th percentile	\$128,294	\$136,922	\$145,187	\$113,393	\$121,967	\$129,696
25th percentile - optimistic	\$157,704	\$181,951	\$208,502	\$136,794	\$160,070	\$186,244
5th percentile - optimistic	\$224,724	\$301,564	\$399,065	\$187,049	\$258,910	\$345,138
Odds we don't die broke	100%	100%	100%	100%	100%	100%

	5% Withdrawal			6% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$49,013	\$46,776	\$42,547	\$13,551	\$14,221	\$12,817
25th percentile - pessimistic	\$86,578	\$89,818	\$91,561	\$69,125	\$74,529	\$78,175
50th percentile	\$100,959	\$108,793	\$116,156	\$91,911	\$100,000	\$103,657
25th percentile - optimistic	\$118,818	\$140,178	\$163,479	\$106,027	\$123,175	\$143,534
5th percentile - optimistic	\$158,434	\$219,261	\$297,549	\$136,997	\$187,264	\$255,383
Odds we don't die broke	99%	99%	99%	96%	96%	96%

	7% Withdrawal			8% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$47,716	\$55,924	\$60,809	\$25,071	\$34,162	\$41,169
50th percentile	\$79,985	\$89,150	\$96,667	\$66,870	\$77,177	\$85,865
25th percentile - optimistic	\$99,436	\$109,279	\$126,568	\$91,647	\$100,000	\$112,913
5th percentile - optimistic	\$122,147	\$163,266	\$222,298	\$111,679	\$143,137	\$193,792
Odds we don't die broke	91%	92%	92%	84%	86%	87%

	9% Withdrawal			10% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$1,307	\$10,621	\$18,904	\$0	\$0	\$0
50th percentile	\$53,156	\$64,403	\$73,968	\$39,289	\$49,881	\$60,658
25th percentile - optimistic	\$84,608	\$94,806	\$101,054	\$78,273	\$87,123	\$97,478
5th percentile - optimistic	\$104,281	\$127,849	\$169,837	\$100,000	\$115,542	\$149,660
Odds we don't die broke	75%	79%	81%	68%	72%	74%

### Projected Assets at Death Female Currently Age 75

	3% Withdrawal			4% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$92,407	\$86,809	\$81,262	\$70,706	\$66,049	\$58,795
25th percentile - pessimistic	\$110,394	\$111,623	\$111,912	\$98,973	\$100,000	\$100,000
50th percentile	\$135,083	\$147,633	\$159,145	\$116,062	\$127,513	\$138,646
25th percentile - optimistic	\$170,563	\$203,816	\$240,821	\$143,370	\$174,149	\$206,951
5th percentile - optimistic	\$258,793	\$366,828	\$508,358	\$206,988	\$305,545	\$436,175
Odds we don't die broke	100%	100%	100%	100%	100%	99%

	5% Withdrawal			6% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$28,946	\$29,091	\$26,884	\$0	\$0	\$0
25th percentile - pessimistic	\$82,204	\$86,252	\$88,916	\$57,906	\$66,750	\$70,718
50th percentile	\$100,174	\$110,128	\$120,051	\$87,520	\$97,918	\$103,862
25th percentile - optimistic	\$120,587	\$146,744	\$176,367	\$104,653	\$125,473	\$150,626
5th percentile - optimistic	\$169,786	\$254,906	\$370,749	\$140,094	\$206,664	\$309,849
Odds we don't die broke	98%	97%	97%	92%	93%	93%

	7% Withdrawal			8% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$30,153	\$40,198	\$47,291	\$0	\$11,346	\$21,228
50th percentile	\$71,417	\$83,614	\$93,027	\$53,655	\$67,543	\$78,780
25th percentile - optimistic	\$95,520	\$107,794	\$129,493	\$85,297	\$98,706	\$111,731
5th percentile - optimistic	\$121,591	\$170,634	\$255,166	\$109,352	\$145,304	\$212,317
Odds we don't die broke	85%	86%	87%	75%	78%	80%

	9% Withdrawal			10% Withdrawal		
	35% Equities	50% Equities	65% Equities	35% Equities	50% Equities	65% Equities
5th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
25th percentile - pessimistic	\$0	\$0	\$0	\$0	\$0	\$0
50th percentile	\$34,658	\$49,005	\$62,057	\$15,805	\$29,847	\$43,334
25th percentile - optimistic	\$75,706	\$88,553	\$100,000	\$66,597	\$78,085	\$91,488
5th percentile - optimistic	\$102,144	\$126,847	\$175,379	\$100,000	\$112,910	\$151,599
Odds we don't die broke	65%	69%	73%	56%	61%	65%