

## *4 Risk Factors that can Rob You of Thousands of Dollars (If not Millions)*

### **It's All About the Curve!**

I believe savings should be tax efficient, low to no risk, and grow without interruption from the multiples of wealth transfers that exist in today's financial world.

When I say that, in general people today, most of them, want to know **what** it is.

In my research about the brain I found our brains tend to work that way. The neo cortex, the newest area of the brain, our Homosapien brain, corresponds with the **what** level of thinking. The neo cortex is responsible for rational, analytical thoughts, and language.

When I get asked **what** it is, I am talking about when it comes to successful wealth accumulation, the **what** is the **Curve**.

I am speaking about the **compound exponential growth curve**<sup>1</sup>.

Albert Einstein famously said the **compound interest** is the most powerful force in the universe. He said,

**“Compound interest is the 8th wonder of the world. He who understands it, earns it; he who doesn't pays it.”**

It is essential that investors learn that we are given one exponential growth curve. For many it's a 25 to 40-year curve depending if and when they start saving.

Screw it up and you may have a hard time correcting it.

This paper will explore the main ways people can potentially interrupt their curve and by doing so could potentially lose \$100's of \$1000's of dollars in the process.



The four main risks that interrupt the curve are:

- 1- Sequence of return.
- 2- A single or multiple loss event
- 3- An inability to contribute
- 4- Shortening of the time span of saving

Financially the formula that creates our curve is:

**Money x Time x Rate of Return**

If anyone of the variables change it affects the curve.

Screw up your curve when you're 55 and depending on when you want to retire, you may potentially run out of time.

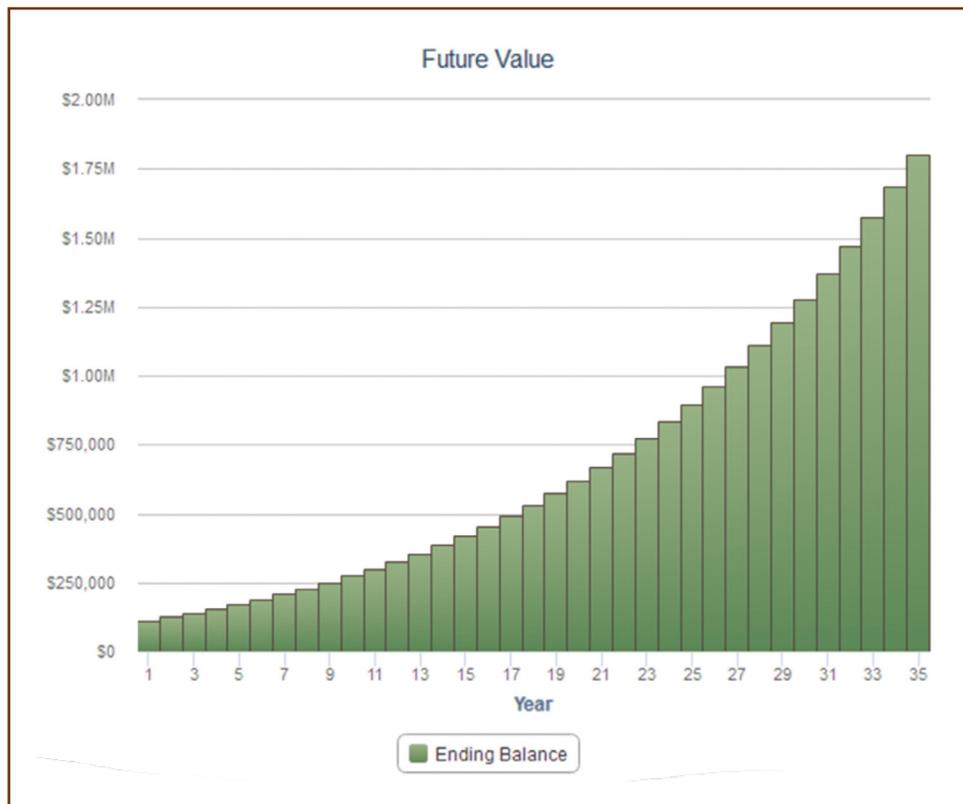
Stop contributing to the curve and that could negatively affect it.

Rates of return that fluctuate up and down all have an influence on the curve.

## *The Perfect Exponential Curve*

Our assumptions are:

- 1 - 35-year time frame (age 30 – 65)
- 2 - adding \$6000 per year to their 401(k)
- 3 - increasing their contributions by 3% per year
- 4 - starting with \$100,000
- 5 - averaging a 6% rate of return



The variables of the **perfect exponential curve** all work together to create this beautiful logarithmic curve growing to \$1,801,520.

Balance Schedule				
Year	Beginning Asset Value	Cash Inflow	Cash Outflow	Ending Asset Value
1	\$100,000	\$6,000	\$0	\$112,360
2	\$112,360	\$6,180	\$0	\$125,652
3	\$125,652	\$6,365	\$0	\$139,939
4	\$139,939	\$6,556	\$0	\$155,285
5	\$155,285	\$6,753	\$0	\$171,760
6	\$171,760	\$6,956	\$0	\$189,439
7	\$189,439	\$7,164	\$0	\$208,399
8	\$208,399	\$7,379	\$0	\$228,725
9	\$228,725	\$7,601	\$0	\$250,506
10	\$250,506	\$7,829	\$0	\$273,834
11	\$273,834	\$8,063	\$0	\$298,812
12	\$298,812	\$8,305	\$0	\$325,544
13	\$325,544	\$8,555	\$0	\$354,144
14	\$354,144	\$8,811	\$0	\$384,733
15	\$384,733	\$9,076	\$0	\$417,437
16	\$417,437	\$9,348	\$0	\$452,392
17	\$452,392	\$9,628	\$0	\$489,741
18	\$489,741	\$9,917	\$0	\$529,638
19	\$529,638	\$10,215	\$0	\$572,244
20	\$572,244	\$10,521	\$0	\$617,731
21	\$617,731	\$10,837	\$0	\$666,281
22	\$666,281	\$11,162	\$0	\$718,090
23	\$718,090	\$11,497	\$0	\$773,362
24	\$773,362	\$11,842	\$0	\$832,315
25	\$832,315	\$12,197	\$0	\$895,183
26	\$895,183	\$12,563	\$0	\$962,210
27	\$962,210	\$12,940	\$0	\$1,033,659
28	\$1,033,659	\$13,328	\$0	\$1,109,806
29	\$1,109,806	\$13,728	\$0	\$1,190,945
30	\$1,190,945	\$14,139	\$0	\$1,277,390
31	\$1,277,390	\$14,564	\$0	\$1,369,470
32	\$1,369,470	\$15,000	\$0	\$1,467,539
33	\$1,467,539	\$15,450	\$0	\$1,571,969
34	\$1,571,969	\$15,914	\$0	\$1,683,156
35	\$1,683,156	\$16,391	\$0	\$1,801,520

Unfortunately, that is not how life works. For many, the curve gets interrupted by a host of common variables.

## Risk 1

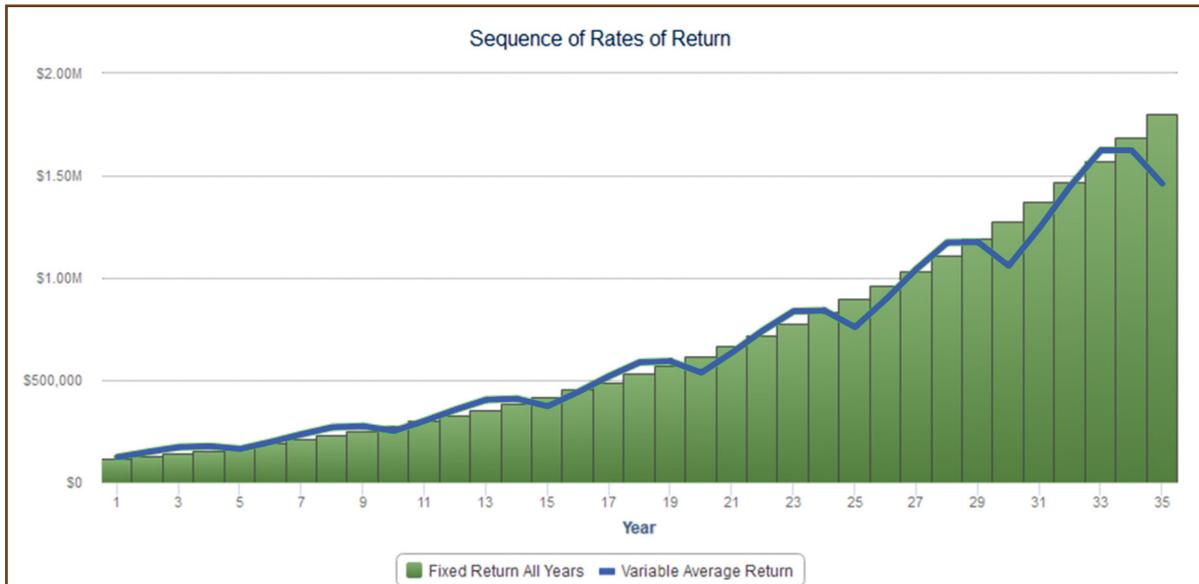
Interruption of the curve by **sequence of return risk**.

Let's explore what I mean by the **sequence of return** versus a **fixed rate of return**.

Pretend we are talking about a person who started saving when they were 23 years old and accumulated \$100,000 in their 401(k) by the time they were 30. Pretty good right?

## Our assumptions are:

- 1- 35-year time frame (age 30 – 65)
- 2- adding \$6000 per year to their 401(k)
- 3- increasing their contributions by 3% per year
- 4- starting with \$100,000
- 5 - **averaging a 6% sequenced average rate of return.**
- 6 - using a repeating five-year rate or return sequence, 16%, 15%, 11%, -1%, -11%,  
 $16\% + 15\% + 11\% - 1\% - 11\% \div 5 = 6\%$



Year	Fixed Return Applied All Years			Variable Rate with Average Every Five Years			
	Rate	Total Allocation	Value EOY	Annual Rate	Average Rate	Total Allocation	Value EOY
1	6%	\$106,000	\$112,360	16%	16.00%	\$106,000	\$122,960
2	6%	\$6,180	\$125,652	15%	15.50%	\$6,180	\$148,511
3	6%	\$6,365	\$139,939	11%	14.00%	\$6,365	\$171,913
4	6%	\$6,556	\$155,285	-1%	10.25%	\$6,556	\$176,684
5	6%	\$6,753	\$171,760	-11%	<b>6.00%</b>	\$6,753	\$163,259
6	6%	\$6,956	\$189,439	16%	7.67%	\$6,956	\$197,449
7	6%	\$7,164	\$208,399	15%	8.71%	\$7,164	\$235,306
8	6%	\$7,379	\$228,725	11%	9.00%	\$7,379	\$269,380
9	6%	\$7,601	\$250,506	-1%	7.89%	\$7,601	\$274,211
10	6%	\$7,829	\$273,834	-11%	<b>6.00%</b>	\$7,829	\$251,015
11	6%	\$8,063	\$298,812	16%	6.91%	\$8,063	\$300,532
12	6%	\$8,305	\$325,544	15%	7.58%	\$8,305	\$355,163
13	6%	\$8,555	\$354,144	11%	7.85%	\$8,555	\$403,726
14	6%	\$8,811	\$384,733	-1%	7.21%	\$8,811	\$408,412
15	6%	\$9,076	\$417,437	-11%	<b>6.00%</b>	\$9,076	\$371,564
16	6%	\$9,348	\$452,392	16%	6.63%	\$9,348	\$441,857
17	6%	\$9,628	\$489,741	15%	7.12%	\$9,628	\$519,209
18	6%	\$9,917	\$529,638	11%	7.33%	\$9,917	\$587,329
19	6%	\$10,215	\$572,244	-1%	6.89%	\$10,215	\$591,569
20	6%	\$10,521	\$617,731	-11%	<b>6.00%</b>	\$10,521	\$535,860
21	6%	\$10,837	\$666,281	16%	6.48%	\$10,837	\$634,168
22	6%	\$11,162	\$718,090	15%	6.86%	\$11,162	\$742,129
23	6%	\$11,497	\$773,362	11%	7.04%	\$11,497	\$836,525
24	6%	\$11,842	\$832,315	-1%	6.71%	\$11,842	\$839,882
25	6%	\$12,197	\$895,183	-11%	<b>6.00%</b>	\$12,197	\$758,350
26	6%	\$12,563	\$962,210	16%	6.38%	\$12,563	\$894,259
27	6%	\$12,940	\$1,033,659	15%	6.70%	\$12,940	\$1,043,279
28	6%	\$13,328	\$1,109,806	11%	6.86%	\$13,328	\$1,172,833
29	6%	\$13,728	\$1,190,945	-1%	6.59%	\$13,728	\$1,174,695
30	6%	\$14,139	\$1,277,390	-11%	<b>6.00%</b>	\$14,139	\$1,058,063
31	6%	\$14,564	\$1,369,470	16%	6.32%	\$14,564	\$1,244,246
32	6%	\$15,000	\$1,467,539	15%	6.59%	\$15,000	\$1,448,134
33	6%	\$15,450	\$1,571,969	11%	6.73%	\$15,450	\$1,624,579
34	6%	\$15,914	\$1,683,156	-1%	6.50%	\$15,914	\$1,624,088
35	6%	\$16,391	\$1,801,520	-11%	<b>6.00%</b>	\$16,391	\$1,460,026

## Risk 1 Summary

Fixed Rate Final: **\$1,801,520**

Variable Rate Final Value: **\$1,460,026**

You can see that the **fixed rate** final accumulation value would be \$1,801,520. The **sequenced average rate** produced \$341,494 less than the fixed rate or \$1,460,026. That's almost a **19%** drop in value. Why, because the curve got interrupted.

By what? Two negative returns per five-year period.

**The Interruption of one variable cost him \$341,494.**

That's a big number!!

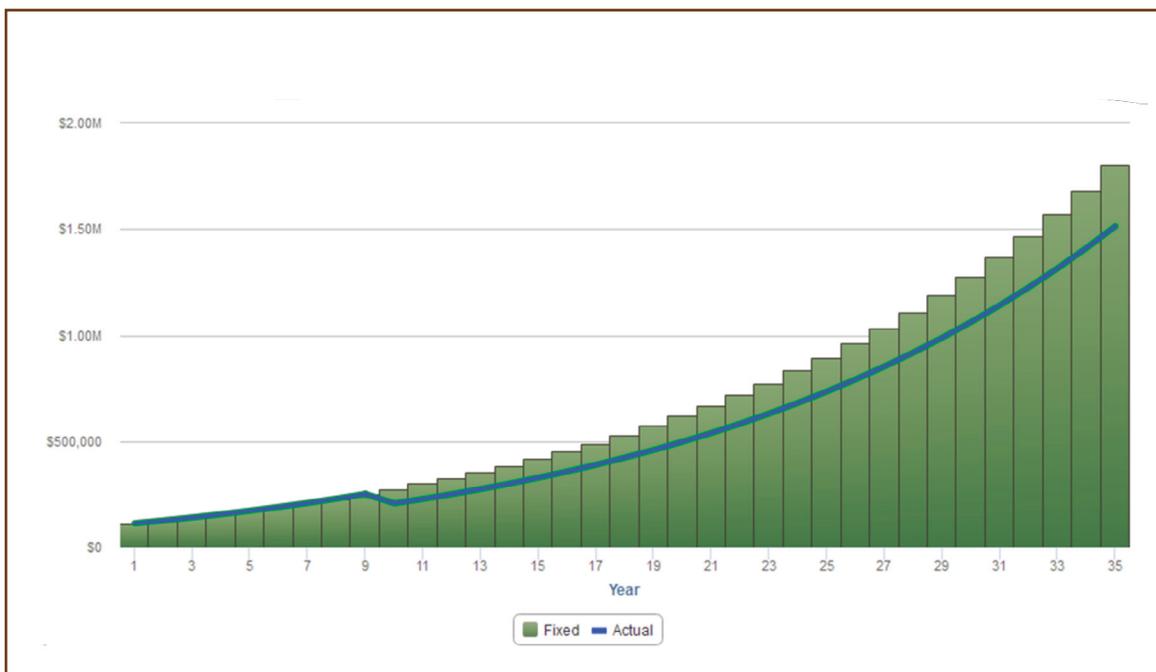
## Risk 2

Interruption of the curve by a **single or multiple loss event**.

Comparing a **fixed rate** versus an **actual rate**.

**Our assumptions are:**

- 1- 35-year time frame (age 30 – 65)
- 2- adding \$6000 per year to their 401(k)
- 3- increasing their contributions by 3% per year
- 4- starting with \$100,000
- 5 - **fixed rate of return** of 6%.
- 6 - **year 10 the market corrected -20%**
- 7 - years 11–35 he gets 6% fixed every year



The key element to Einstein's comment about the power of compounding is **uninterrupted compounding is the most powerful force in the universe.** Negatively change any of the variables and the curve becomes less.

Year	Fixed Rate			Actual Rate		
	Rate	Inflow/Outflow	Value (EOY)	Rate	Inflow/Outflow	Value (EOY)
1	6.00%	\$106,000	\$112,360	6.00%	\$106,000	\$112,360
2	6.00%	\$6,180	\$125,652	6.00%	\$6,180	\$125,652
3	6.00%	\$6,365	\$139,939	6.00%	\$6,365	\$139,939
4	6.00%	\$6,556	\$155,285	6.00%	\$6,556	\$155,285
5	6.00%	\$6,753	\$171,760	6.00%	\$6,753	\$171,760
6	6.00%	\$6,956	\$189,439	6.00%	\$6,956	\$189,439
7	6.00%	\$7,164	\$208,399	6.00%	\$7,164	\$208,399
8	6.00%	\$7,379	\$228,725	6.00%	\$7,379	\$228,725
9	6.00%	\$7,601	\$250,506	6.00%	\$7,601	\$250,506
10	6.00%	\$7,829	\$273,834	-20.00%	\$7,829	\$206,667
11	6.00%	\$8,063	\$298,812	6.00%	\$8,063	\$227,615
12	6.00%	\$8,305	\$325,544	6.00%	\$8,305	\$250,075
13	6.00%	\$8,555	\$354,144	6.00%	\$8,555	\$274,148
14	6.00%	\$8,811	\$384,733	6.00%	\$8,811	\$299,936
15	6.00%	\$9,076	\$417,437	6.00%	\$9,076	\$327,553
16	6.00%	\$9,348	\$452,392	6.00%	\$9,348	\$357,114
17	6.00%	\$9,628	\$489,741	6.00%	\$9,628	\$388,747
18	6.00%	\$9,917	\$529,638	6.00%	\$9,917	\$422,584
19	6.00%	\$10,215	\$572,244	6.00%	\$10,215	\$458,767
20	6.00%	\$10,521	\$617,731	6.00%	\$10,521	\$497,445
21	6.00%	\$10,837	\$666,281	6.00%	\$10,837	\$538,779
22	6.00%	\$11,162	\$718,090	6.00%	\$11,162	\$582,937
23	6.00%	\$11,497	\$773,362	6.00%	\$11,497	\$630,099
24	6.00%	\$11,842	\$832,315	6.00%	\$11,842	\$680,457
25	6.00%	\$12,197	\$895,183	6.00%	\$12,197	\$734,213
26	6.00%	\$12,563	\$962,210	6.00%	\$12,563	\$791,583
27	6.00%	\$12,940	\$1,033,659	6.00%	\$12,940	\$852,794
28	6.00%	\$13,328	\$1,109,806	6.00%	\$13,328	\$918,089
29	6.00%	\$13,728	\$1,190,945	6.00%	\$13,728	\$987,725
30	6.00%	\$14,139	\$1,277,390	6.00%	\$14,139	\$1,061,976
31	6.00%	\$14,564	\$1,369,470	6.00%	\$14,564	\$1,141,132
32	6.00%	\$15,000	\$1,467,539	6.00%	\$15,000	\$1,225,501
33	6.00%	\$15,450	\$1,571,969	6.00%	\$15,450	\$1,315,408
34	6.00%	\$15,914	\$1,683,156	6.00%	\$15,914	\$1,411,202
35	6.00%	\$16,391	\$1,801,520	6.00%	\$16,391	\$1,513,249

### Risk 2 Summary

Average Return - Final Year: **5.26%**  
 Actual Return - Final Year: **5.31%**

### Final Values

The **fixed rate** accumulated to \$1,801,520  
 The **actual rate** accumulated to \$1,513,249.  
**One interruption cost him 16% or \$288,243.**

## Risk 3

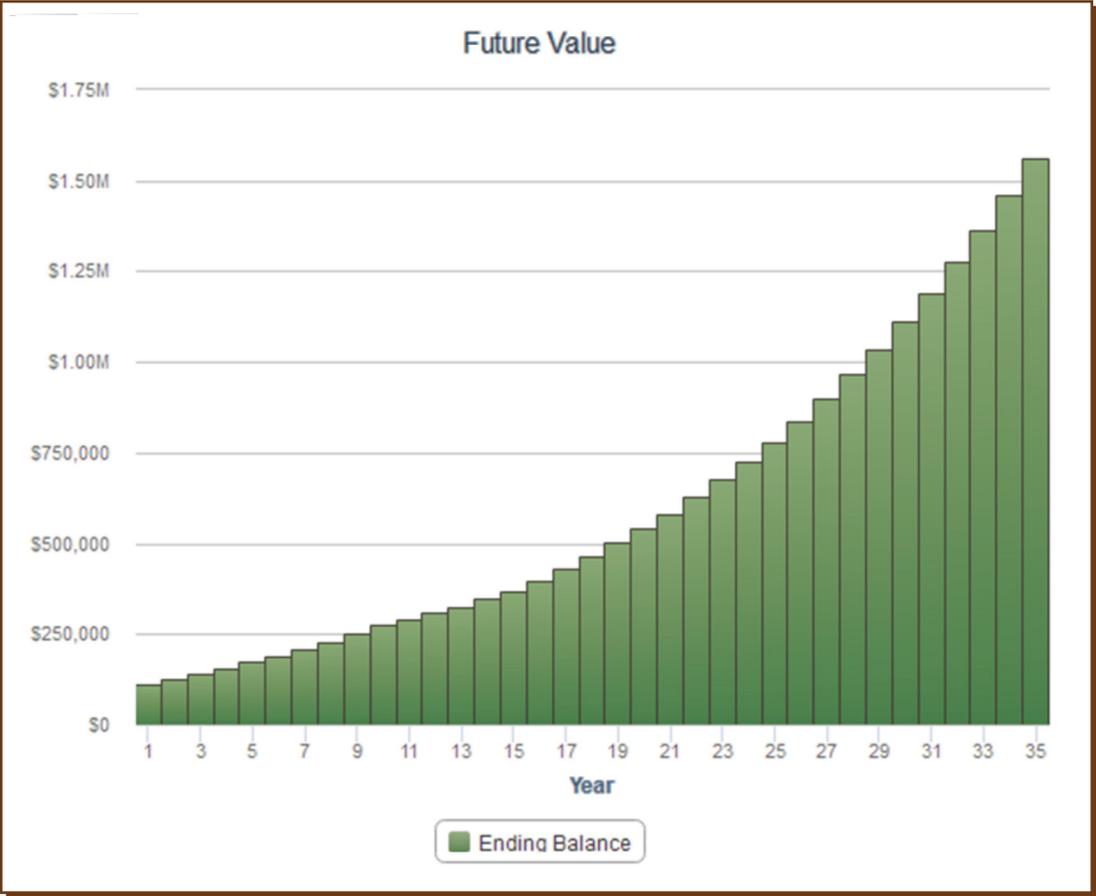
Interruption of the curve by *an inability to contribute*.

Life throws us curveballs too.

In this example our 30-year-old subject with the \$100,000 saved in his 401(k) can't contribute for five years.

### Our assumptions are:

- 1- 35-year time frame (age 30 – 65)
- 2 - adding \$6000 per year to their 401(k)
- 3 - increasing their contributions by 3% per year
- 4 - averaging a 6% rate of return
- 5 - starting with \$100,000
- 6 - **can't contribute for 5 years (years 11 – 15)**



Balance Schedule				
Year	Beginning Asset Value	Cash Inflow	Cash Outflow	Ending Asset Value
1	\$100,000	\$6,000	\$0	\$112,360
2	\$112,360	\$6,180	\$0	\$125,652
3	\$125,652	\$6,365	\$0	\$139,939
4	\$139,939	\$6,556	\$0	\$155,285
5	\$155,285	\$6,753	\$0	\$171,760
6	\$171,760	\$6,956	\$0	\$189,439
7	\$189,439	\$7,164	\$0	\$208,399
8	\$208,399	\$7,379	\$0	\$228,725
9	\$228,725	\$7,601	\$0	\$250,506
10	\$250,506	\$7,829	\$0	\$273,834
11	\$273,834	\$0	\$0	\$290,264
12	\$290,264	\$0	\$0	\$307,680
13	\$307,680	\$0	\$0	\$326,141
14	\$326,141	\$0	\$0	\$345,709
15	\$345,709	\$0	\$0	\$366,452
16	\$366,452	\$7,829	\$0	\$396,738
17	\$396,738	\$8,064	\$0	\$429,090
18	\$429,090	\$8,306	\$0	\$463,639
19	\$463,639	\$8,555	\$0	\$500,526
20	\$500,526	\$8,812	\$0	\$539,898
21	\$539,898	\$9,076	\$0	\$581,912
22	\$581,912	\$9,348	\$0	\$626,736
23	\$626,736	\$9,629	\$0	\$674,547
24	\$674,547	\$9,918	\$0	\$725,532
25	\$725,532	\$10,215	\$0	\$779,892
26	\$779,892	\$10,522	\$0	\$837,838
27	\$837,838	\$10,837	\$0	\$899,596
28	\$899,596	\$11,162	\$0	\$965,404
29	\$965,404	\$11,497	\$0	\$1,035,515
30	\$1,035,515	\$11,842	\$0	\$1,110,198
31	\$1,110,198	\$12,197	\$0	\$1,189,739
32	\$1,189,739	\$12,563	\$0	\$1,274,441
33	\$1,274,441	\$12,940	\$0	\$1,364,624
34	\$1,364,624	\$13,328	\$0	\$1,460,629
35	\$1,460,629	\$13,728	\$0	\$1,562,819

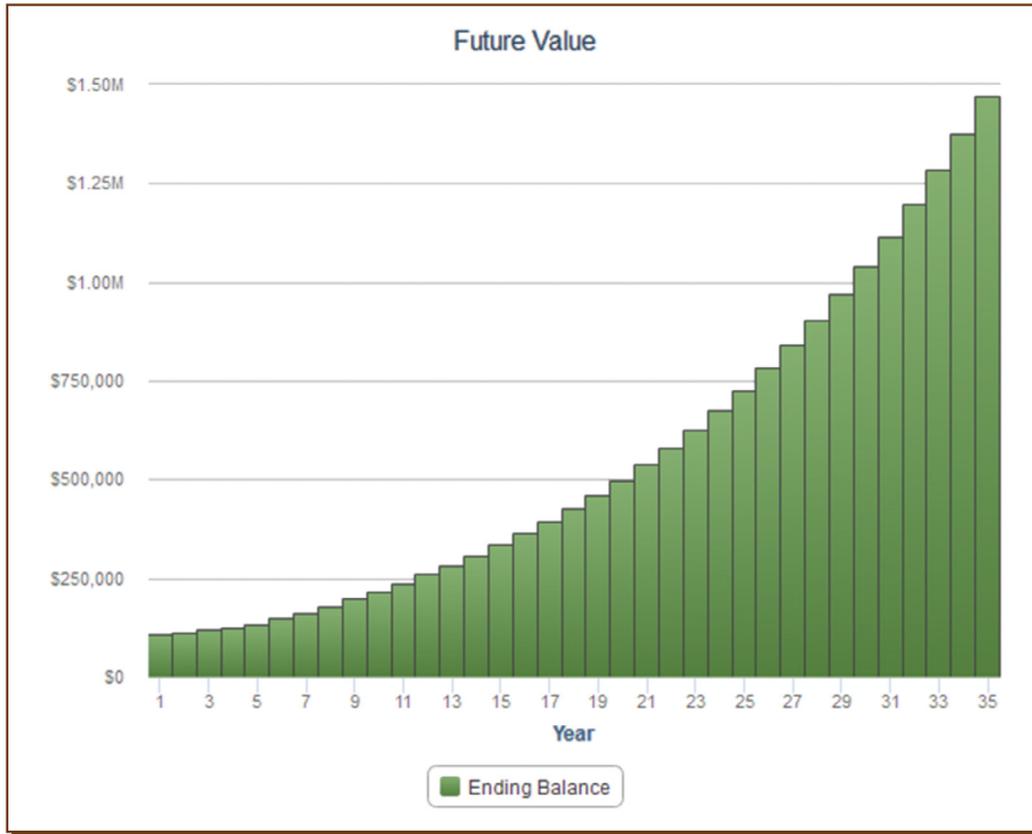
**Risk 3 Summary**  
 Because of circumstances in his control or not in his control,  
 he stopped saving in years 11 - 15  
**That five-year hiatus cost him \$238,701.**

## Risk 4

Interruption of the curve by *shortening of the time span of saving*  
*In other words, waiting to save.*

Our assumptions are:

- 1- 35-year time frame (age 30 – 65)
- 2 - adding \$6000 per year to their 401(k)
- 3 - increasing their contributions by 3% per year
- 4 - starting with \$100,000
- 5 - averaging a 6% rate of return
- 6 - **Savings delayed for 5 years**



### Balance Schedule

Year	Beginning Asset Value	Cash Inflow	Cash Outflow	Ending Asset Value
1	\$100,000	\$0	\$0	\$106,000
2	\$106,000	\$0	\$0	\$112,360
3	\$112,360	\$0	\$0	\$119,102
4	\$119,102	\$0	\$0	\$126,248
5	\$126,248	\$0	\$0	\$133,823
6	\$133,823	\$6,000	\$0	\$148,212
7	\$148,212	\$6,180	\$0	\$163,655
8	\$163,655	\$6,365	\$0	\$180,222
9	\$180,222	\$6,556	\$0	\$197,985
10	\$197,985	\$6,753	\$0	\$217,022
11	\$217,022	\$6,956	\$0	\$237,417
12	\$237,417	\$7,164	\$0	\$259,256
13	\$259,256	\$7,379	\$0	\$282,633
14	\$282,633	\$7,601	\$0	\$307,648
15	\$307,648	\$7,829	\$0	\$334,405
16	\$334,405	\$8,063	\$0	\$363,017
17	\$363,017	\$8,305	\$0	\$393,602
18	\$393,602	\$8,555	\$0	\$426,286
19	\$426,286	\$8,811	\$0	\$461,203
20	\$461,203	\$9,076	\$0	\$498,495
21	\$498,495	\$9,348	\$0	\$538,313
22	\$538,313	\$9,628	\$0	\$580,818
23	\$580,818	\$9,917	\$0	\$626,179
24	\$626,179	\$10,215	\$0	\$674,577
25	\$674,577	\$10,521	\$0	\$726,204
26	\$726,204	\$10,837	\$0	\$781,263
27	\$781,263	\$11,162	\$0	\$839,971
28	\$839,971	\$11,497	\$0	\$902,555
29	\$902,555	\$11,842	\$0	\$969,261
30	\$969,261	\$12,197	\$0	\$1,040,345
31	\$1,040,345	\$12,563	\$0	\$1,116,082
32	\$1,116,082	\$12,940	\$0	\$1,196,763
33	\$1,196,763	\$13,328	\$0	\$1,282,696
34	\$1,282,696	\$13,728	\$0	\$1,374,209
35	\$1,374,209	\$14,139	\$0	\$1,471,649

**Risk 4 Summary**  
 Our subject delayed saving and only saved for 30 years instead of 35 years.  
 That delay cost him \$329,871.

**The risks that could interrupt the curve  
come with a hefty price tag.**

**Risk 1 - sequence of return cost \$341,494.**

**Risk 2- a single or multiple loss event cost \$288,243.**

**Risk 3 - an inability to contribute cost \$238,701.**

**Risk 4 - shortening the time span of saving cost \$329,871.**

**Consider if all four variables happened to the same curve.  
The loss could potentially be millions of dollars!**

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**The moral of the story is:**

**Don't mess with your curve  
or let circumstances you CAN control  
mess with your curve.**

**Try to keep your money growing on the curve.**

I opened this paper with ***“I believe savings should be tax efficient, low to no risk, and grow without interruption from the multiples of wealth transfers that exist in today’s financial world.”***

This is what gets me up in the morning. Knowing that I can teach this to another in a way they can “get it” and demonstrate strategies that guard against this ever happening to their curve.

*Written by Joseph Varno*

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<sup>1</sup>Einstein, A. (2019). Compound interest - Albert Einstein. [online] Quotesonfinance.com. Available at: <https://quotesonfinance.com/quote/79/albert-einstein-compound-interest>.

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