

The analysis below was done for a client who started a new job. The new company's 401k was very expensive and I wanted to determine whether it was worth contributing to at all. The company provided no matching contribution. I determined that it was so costly it wasn't worth doing.

Your 401k is very expensive. The average fund expense appears to be approximately 1.7%. Even their equity index fund which simply tracks the S&P 500 costs 1.35%. By contrast, TIAA and Vanguard offer the same thing at 0.36% and 0.05% respectively. Some of you 401k funds cost 2% which is the highest I've seen!

High investment expenses have a large corrosive impact on the growth of retirement savings. In investing you don't get what you pay for. Rather, you get what *you don't pay for*: market returns minus the expense of being in the market.

Nobel Prize winning finance professor Bill Sharpe explained this well in his 1992 paper *The Arithmetic of Active Management*. In the excerpt below, he is referring to costly actively managed funds which seek to beat the market but rarely do. All but one of your funds is actively managed. Passive management refers to index funds which track the market at a low cost.

Sharpe wrote:

"If "active" and "passive" management styles are defined in sensible ways, it must be the case that

(1) before costs, the return on the average actively managed dollar will equal the return on the average passively managed dollar and

(2) after costs, the return on the average actively managed dollar will be less than the return on the average passively managed dollar

These assertions will hold for any time period. Moreover, they depend only on the laws of addition, subtraction, multiplication and division. Nothing else is required."

All but one of your funds are actively managed but cost more than double the approximately 0.75% expense you would expect to pay at Fidelity or T. Rowe Price.

The table below shows the impact that expenses have on retirement savings. \$20,000 is saved annually into four accounts. The first account has no expense. The second would be a low cost plan at Vanguard and the reasonable cost plan would be representative of TIAA CREF. Note that your 401k plan costs a whopping \$35,000 more than the reasonably priced plan!

	Market	Low cost	Reasonable cost	Your 401k
Return	5.00%	5.00%	5.00%	5.00%
Their cost	0%	-0.15%	-0.50%	-1.70%
Your return	5.00%	4.85%	4.50%	3.30%
In 15 years	\$431,571	\$426,731	\$415,681	\$380,266
Total cost		\$4,840	\$15,890	\$51,305

One could argue that the tax savings of the 401k contribution offsets the high expense of the plan. I created a scenario similar to yours to test this argument. I programmed the following within the financial planning software:

- 50 year old client who retires at 65.
- Earns \$100,000 and spends \$60,000 annually.
- Annual market returns are 5% before cost.
- Has \$100,000 in a non-retirement account and \$300,000 in an IRA. These accounts are invested in low cost index funds with annual after cost returns of 4.85%.
- Client claims a \$2500 per month Social Security retirement benefit at age 67.

Two scenarios were run:

1. \$20,000 is saved annually into the 401k with an annual 3.3% after cost return. At retirement, this plan is rolled into a low cost IRA which earns 4.85% annually after cost.
2. \$20,000 is saved annually into a non-retirement account which earns 4.85% annually after cost.

To accurately compare the two scenarios we have to account for the embedded tax liabilities within the accounts. A \$100,000 401k is worth \$75,000 on an after tax basis to a client in the 25% tax bracket.

In the “No 401k” scenario you are in the 15% federal tax bracket in 2037 which is the year of your first required minimum distribution from your IRA. In the 401k scenario you are in the 25% tax bracket that year. It’s higher because the required minimum distribution is larger.

The table below shows the after tax values of both scenarios for three time periods. In the “No 401k” scenario, the IRA is taxed at 15%. In the 401k scenario, both the IRA and 401k is taxed at the 25% rate that you’d experience with the larger minimum required distributions. The capital gains within the non-retirement account are taxed at the 15% capital gains rate.

	No 401k	401k
Age 65	\$ 1,111,817	\$ 1,066,166
Age 80	\$ 1,272,693	\$ 1,221,020
Age 90	\$ 1,258,878	\$ 1,212,484

At retirement, the “No 401k” scenario has a post-tax account value that is \$45,652 greater than the 401k scenario. Note that this is very close to your 401k cost shown above.

The annual tax bill of both scenarios is shown below. Note that the “No 401k” scenario has higher tax bills during the working years but lower in retirement since the required minimum distributions are smaller. Not surprisingly, the “present value” of both lifetime tax bills is about the same.¹ This is typical for those who save enough for retirement and have a standard of living that is unchanged.

Taxes			
	401k	No 401k	
Present value	\$559,856	\$561,417	
Age			Difference
50	25,160	30,798	5,638
51	25,957	32,345	6,388
52	26,779	33,419	6,640
53	27,627	34,529	6,902
54	28,501	35,676	7,175
55	29,404	36,862	7,458
56	30,335	38,088	7,753
57	31,295	39,355	8,060
58	32,285	40,665	8,380
59	33,307	42,019	8,712
60	34,361	43,420	9,059
61	35,448	44,867	9,419
62	36,570	46,364	9,794
63	37,728	47,912	10,184
64	12,123	15,023	2,900
65	449	491	42
66	0	0	0
67	0	0	0
68	0	0	0
69	10,636	5,606	-5,030
70	11,790	6,052	-5,738
71	12,935	6,516	-6,419

¹ The present value takes into account the time value of money. For example, one would have to set aside $\$553 = \$1000 / (1.03^{20})$ in an account earning 3% today to fund a \$1000 tax liability due in 20 years. The present value of that tax bill is \$533.

72	14,116	6,998	-7,118
73	15,158	7,499	-7,659
74	16,065	8,018	-8,047
75	16,855	8,557	-8,298
76	17,583	9,094	-8,489
77	18,436	9,797	-8,639
78	19,218	10,463	-8,755
79	20,024	11,148	-8,876
80	20,855	11,852	-9,003
81	21,710	12,575	-9,135
82	22,587	13,274	-9,313
83	23,486	13,892	-9,594
84	24,225	14,436	-9,789
85	24,961	14,984	-9,977
86	25,690	15,535	-10,155
87	26,407	16,087	-10,320
88	27,104	16,601	-10,503
89	27,514	16,958	-10,556
90	27,871	17,305	-10,566
91	28,164	17,640	-10,524
92	28,384	17,960	-10,424
93	28,180	18,151	-10,029
94	27,952	16,262	-11,690

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