



**THE OHIO STATE UNIVERSITY**

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FISHER COLLEGE OF BUSINESS

## **Investor Policy Statement Project**

**Submitted By :  
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## **Investment Objective**

The purpose of an Investor Policy Statement (IPS) is to outline my personal financial goals, expected returns, funds for retirement, risk tolerance, rebalancing factors, and other attributes that will guide investment planning.

The financial goal is to invest the savings in a way that will provide enough funds to live a retirement life comfortably. The focus is to have an appropriate asset allocation with a rate of return of around 8-9% annually and lower volatility for the overall portfolio.

The investment should be enough to cover all the living and major expenses without going into a deficit or having a need to take a loan from a bank.

## **Risk Tolerance**

According to various online surveys, risk tolerance is moderately aggressive. The suggestion is to invest more in risky assets to expect a higher return but from personal experience, my investment strategy will be moderate. The target will be to include safe asset classes as well as high-risk asset classes for having a balance of good returns and low volatility in the portfolio.

## **Investment Constraints**

Investment management for personal finance might not go as planned. There can be many reasons that the investment goals mentioned are not fulfilled.

There can be many investment constraints –

1] Market Volatility – Unexpected events like the pandemic, financial crisis, etc. in the market can increase market volatility and reduce expected returns. By getting lower returns, the savings in the funds will decrease thus hampering the investment goals.

2] Time Horizon- The IPS is based on the assumed time horizon. In real life, if the same time horizon is not followed for investment, this will change the output and the funds for retirement will reduce.

3] Tax Brackets- In the future, if the tax brackets are changed by the government, the after-tax income might reduce or increase. If the tax is increased, the final returns will be less as the compounding effect will not be the same.

4] Income- The investments made are based on a certain percentage of the income. If the promotions, bonuses, and increments are not in the same manner, the invested amount will be different, and the final fund value will be much smaller. This will affect the plans and living standards after retirement.

## Time Horizon

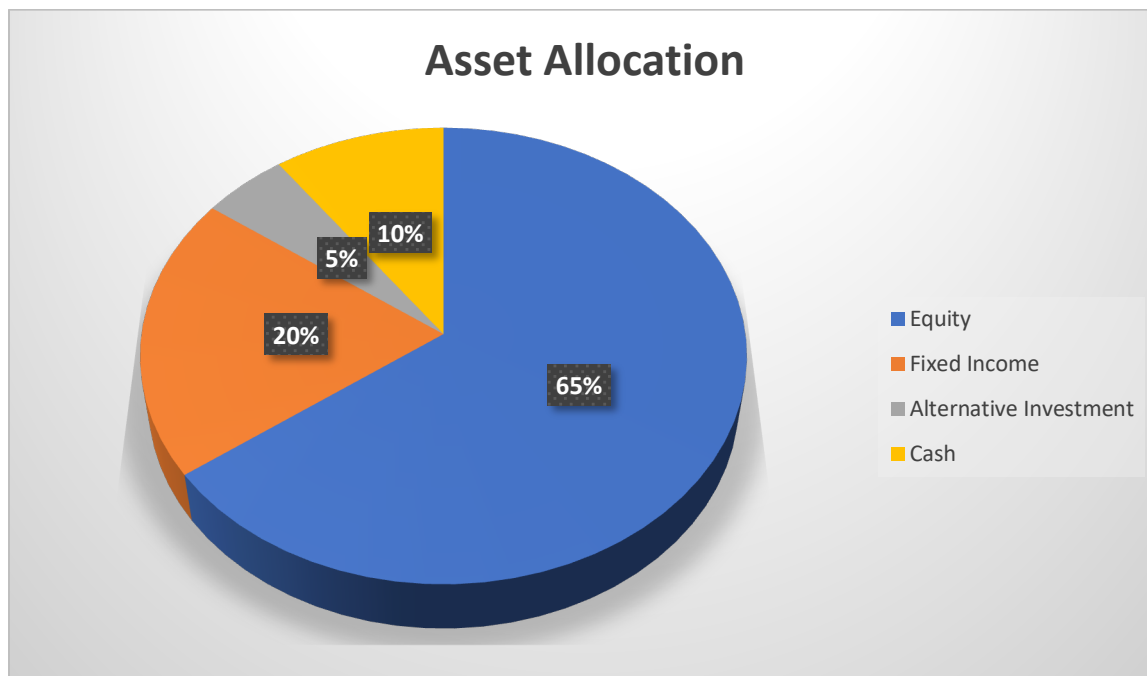
As per my current age of 24, I am assuming that I will retire at the age of 65. This gives me 41 working years in which I can expect to earn income on annual basis. If death is expected at the age of 84, it is 19 years after retirement without income. The goal is to have enough funds that will support me through these 19 years without dropping the living standard.

## Tax Consideration

For income tax, there is a need to consider 2 different tax rates. One of the federal tax rates and the second about state tax rates (Mentioned in Exhibits).

Apart from the income tax, other income from dividends, selling stocks, etc., the capital gains tax is a flat rate of 4.95%. The effective rate of property tax in Illinois is around 2.07%.

## Target Asset Allocation



For asset allocation, being a moderate risk-tolerant investor the weight for assets is allocated to get good returns with less volatility.

**Equity** - 65% of the savings amount is invested in equities. In S&P 500 (SPTR Index) 20% is allocated and will be considered as a moderate risk. 20% of the fund is invested in Russell Mid-cap funds (RUMCGRTR) and 15% is invested in small-cap stocks (RU20INTR). 10% of savings is invested in equities of emerging markets.

**Fixed Income** - 20% of the savings are invested in the bond market. For the long-term bond market, I have used Bloomberg U.S Aggregated Total Return Value Unhedged USD index and invested 10% of the funds. For high-yield bonds and U.S. treasuries, I have invested 5% in each of these categories.

**Alternate Investments** - 5% has been invested in the REIT (FNERTR Index) fund. The expected return from this investment is around 10-11%.

**Cash** - 10% is invested in cash tracking SPBDUB6T Index, with the expected return of 2.5-3% based on historical data.

## **Investment Selection Criteria**

The investment selection criteria are aligned with my investment goal, to have savings for retirement age without any need to drop the standard of living and require taking on any debt. The goal is to have a retirement fund with more than \$50 million.

To obtain the desired result,

- The investments must give a minimum average return of 8% compounding annually.
- The standard Deviation of the portfolio should be less than 15%.
- The maximum loss in a year should not cross more than 15% of the portfolio value.
- The risk-adjusted return should be better than the peers.
- Expense Ratio and 12b-1 fees should be minimum for mutual funds.

## **Rebalancing Process**

First, the Rebalancing of the portfolio will be done if the standard deviation for the overall portfolio increases by more than 20%. Assets with a high standard deviation of more than 20% for more than 60 consecutive days will be rebalanced.

Second, if some asset classes are giving less than an average return or lower returns than their peer for more than 6 months, then the investment will be shifted to other funds in the same asset class with better returns.

In case of an economic shock like a pandemic, financial crisis, recession, etc., then most of the high-risk investment needs to be moved to low-volatility options like the bond market and cash category until the market recovers. These funds will then be used to buy equities at a lower price.

## **Investment Monitoring Process**

Investments will be monitored in a quarterly manner. It is important to track the progress of my portfolio if it is aligned with my investment goals or not. Monitoring will involve looking at the returns in the past quarter, expense ratios, volatility, upcoming dividends and splits in the equity market, etc.

If the portfolio is not performing according to expectations, then the portfolio will be rebalanced.

## **Asset Allocation and Fund Selection**

Based on the risk surveys, the risk tolerance level is moderately aggressive. The assets have been allocated in a way that would align with my risk tolerance. While allocating the portfolio, the goal was to keep the portfolio's standard deviation below 15%. I chose the assets that would offer growth as well as stability.

65% of the savings have been allocated to equities. It includes large-cap, mid-cap, and small-cap funds. Apart from these, emerging markets have been included for a higher return. This asset category provided around 15-16% returns in the past. A small portion of the savings that is 10% will be invested in this category. This asset class is for growth and value appreciation of the savings in the long term which will create enough funds for retirement.

20% of the savings will be invested in the fixed-income bond market. The 20% is distributed in long-term bonds, U.S. treasuries, and high-yield bonds. This asset class is for regular income by means of coupon payments and the principal amount by retirement age. Long-term bond investment is a moderate risk investment as the standard deviation is about 6%. This helps in reducing the standard deviation of the overall portfolio with stable returns.

5% of the savings are invested in an alternative investment asset class, REITs. This asset class offers a return of around 10-11% which helps to hedge against inflation. REITs offer higher yields because of the assets tax structure. This will help in wealth generation but with a higher risk.

10% has been allocated in cash for a safe investment. This investment tracks the SPBDUB6T index and has given around 2.7% returns. The standard deviation for this is 2.30% with a 1.18 return/risk ratio. In case the market falls or if there is a recession this asset class will be the safest option.

Based on the asset allocation, the portfolio's average expected return is 8.7% with a standard deviation of 13.8%.

To calculate the retirement fund, I have assumed the starting salary to be \$85k and the city of employment as Chicago. The tax rate assumed is federal tax rates and Illinois state tax rates for income. 401K contribution is considered to be 5% of the salary, and an equal amount will be

contributed by the employer as well. Apart from this, 5% is contributed to the emergency fund for liquidity purposes in case of medical or other emergencies.

After calculating the in-hand salary, I have calculated all the basic expenses which are then subtracted from the in-hand salary to get the savings.

The savings amount is then invested as per the asset allocation. The total returns are the addition of investments and 401K which will be the retirement savings fund. As per the assumptions and calculations mentioned in the **Excel Model** attached to the report, the retirement savings fund would be **\$62,640,148** which satisfies the investment goal of having more than \$50 million for retirement.

To calculate the monthly income during retirement, the total amount would be divided by the number of months until death. The monthly income comes to around **\$274,737**.

# Exhibits

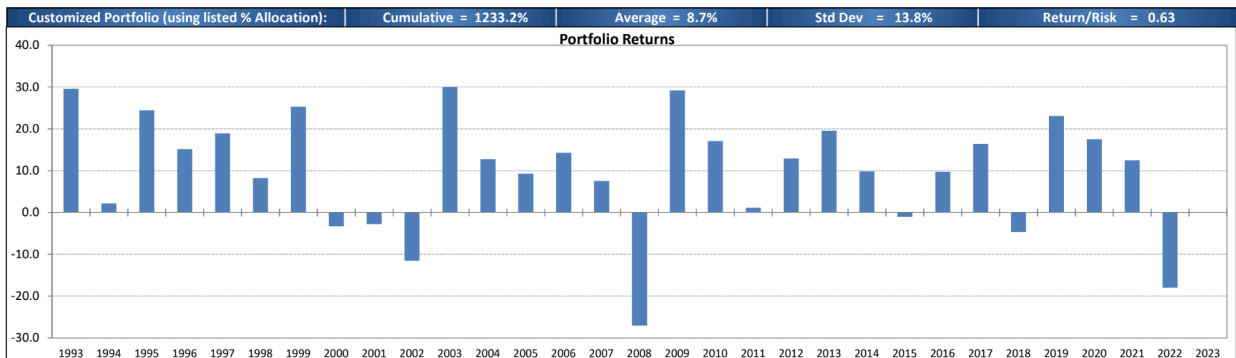
## Exhibit 1

### Asset Allocation

Bloomberg

### Asset Allocation Calculator

Color	Asset Class	% Allocation	Total Return (%)	Std Dev (%)	Return/Risk
	Cash (SPBDUB6T Index )	10	2.72%	2.30%	1.18
	S&P 500 (SPTR Index )	20	10.17%	17.84%	0.57
	REIT (FNERTR Index )	5	10.66%	19.35%	0.55
	Russell 1000 (RUMCGRTR Index )	20	10.44%	22.91%	0.46
	Small Stocks (RU20INTR Index )	15	9.92%	18.72%	0.53
	Commodities (SPGSCITR Index )	0	1.13%	25.19%	0.04
	EAFE (GDDUEAFE Index )	0	5.62%	18.58%	0.30
	Bonds - Agg (LBUSTRUU Index )	10	4.98%	5.85%	0.85
	Munis (LMBITR Index )	0	4.98%	5.66%	0.88
	High Yield (LF98TRUU Index )	5	8.12%	15.33%	0.53
	USTreasuries (LUTLTRUU Index )	5	6.24%	13.34%	0.47
	Emerging Mkts (GDLEEGF Index )	10	15.90%	43.84%	0.36



## Exhibit 2

### Inputs for Asset Allocation

#### Bloomberg

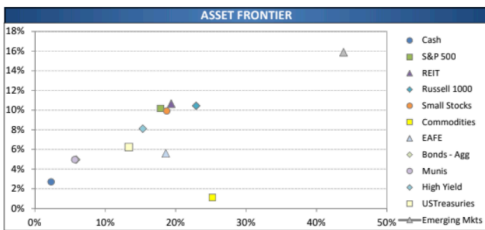
#### Asset Allocation Calculator

Start Year	1991	Currency	USD
End Year	2022	Maximum Loss %	-12

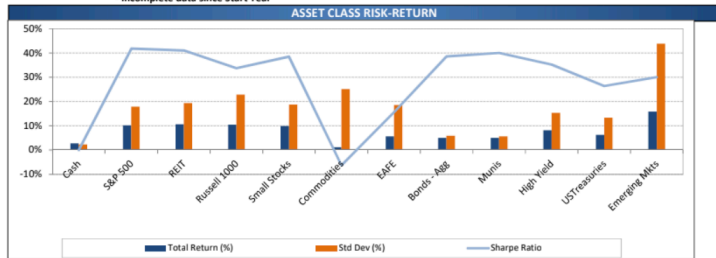
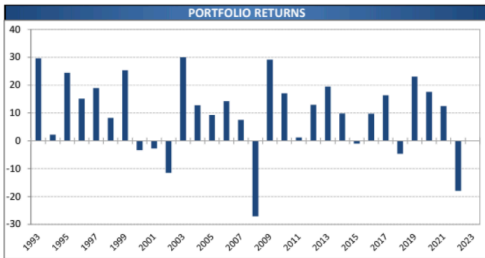
Asset Class	Ticker	Ticker Name	% Allocation
Cash	SPBDUBGT Index	S&P/BGC 3-6M US TBill TR	10
S&P 500	SPTR Index	S&P 500 TR 4 JAN 1988	20
REIT	FNERTR Index	FTSE E/N All Eqty ReitTR	5
Russell 1000	RUMGRTR Index	Russell Midcap Grwth TR	20
Small Stocks	RU20NTR Index	Russell 2000 TR Idx	15
Commodities	SPGSCITR Index	S&P GSCI Tot Return Index	0
EAFE	GDOUEAFE Index	MSCI Daily TR Gross EAFE	0
Bonds - Agg	LBUSTRUU Index	U.S. Aggregate	10
Munis	LMBITR Index	Municipal Bond Index	0
High Yield	LF98TRU Index	U.S. Corporate High Yield	5
USTreasuries	LUTLTRU Index	Long	5
Emerging Mkts	GDLEEGF Index	MSCI Daily TR Gross Emer	10
			100

PERIODIC TABLE																														
1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
BEST																														
185	27.7	37.8	36.3	31	28.6	77.9	49.7	18.8	32.1	87.3	31.8	35.8	35.3	33.6	24	82.8	27.6	21.9	38.3	38.8	26	1.1	21.3	31	1.92	35.5	31.8	56.5	26	
32.9	6.06	34	33.9	23	20.3	51.5	38.6	6.44	18.8	46.7	20.7	25.6	28.8	22.7	52.6	58.2	26.9	10.7	17.5	25.1	2.83	17.1	26	1.38	31.5	20	42.4	8.38		
19	5.29	10.7	23	22	17.9	40.9	20.3	7.91	10.3	62.7	18.3	14	26.9	11.6	3.06	46.3	26.4	8.29	17.4	32.4	13.7	3.38	27	25	0.01	38.7	18.5	28.7	-8.5	
18.9	4.25	26.5	17.5	20	13.5	27.3	11.7	5.29	9.4	39.2	17.3	12.2	18.4	11.4	-2.5	32.5	15.1	7.84	16.4	21.3	11.9	0.55	11.4	22	-1.8	25.5	38.4	14.8	-11	
17.2	3.57	30.3	36.5	15	8.69	21.3	11.6	5.13	3.92	87.3	16.4	12.1	15.8	9.81	-26	38	15.3	4.08	26	7.44	6.05	0.38	10.1	15	-2.1	22.7	17.7	12.7	-13	
17.1	1.32	19.2	13.5	13	6.48	21	6.29	4.96	1.95	29	15.5	6.5	11.8	6.97	-34	27.2	14.4	2.11	15.8	3.79	5.97	-0.2	8.63	8.7	-1.85	8.28	11.8	-14	-14	
12.3	-1	18.5	11.4	9.7	5.51	4.76	-3	4.21	-1.4	38.7	11.1	4.91	10.7	5.49	-37	20.5	9.38	15.8	15.8	2.96	5.57	-0.4	2.88	8.5	-4.4	12.6	7.51	5.28	-15	
11.2	-1.8	17.5	6.36	9.2	1.87	2.39	-1.9	2.49	-7.1	20.7	10.9	4.55	4.84	5.36	-36	11	9.02	-1.2	6.78	0.12	4.89	-1.2	2.65	7.5	-4.6	14.8	7.11	1.52	-18	
10.4	-2.2	15.3	5.46	5.4	3.5	-0.8	0.3	-1.2	-1.6	6.31	7.7	3.51	4.81	1.36	-43	12.9	8.21	-1.7	4.22	-1.2	2.45	-4.8	1.51	5.8	-9.7	14.3	5.21	0.14	-20	
9.75	-2.9	11.6	4.41	4.8	1.8	-2.1	-1.2	-20	-10	4.1	4.81	3.1	4.33	1.87	-44	5.93	6.54	-4.2	3.56	-7	1.09	-4.3	1.33	5.4	-11	8.72	0.89	6.06	-25	
7.48	-5.2	6.48	3.63	2.1	-30	-4.6	-14	-21	-32	2.48	4.34	2.74	1.85	-1.6	-46	9.38	2.38	-12	0.18	-2.6	-5.4	-5.4	0.48	5.5	-13	7.54	-5.1	-1.5	-27	
-13	-7.6	0.77	-0.9	-14	-36	-8.7	-25	-32	-27	1.23	1.3	2.43	-15	-16	-46	13	0.24	-12	0.08	-11	-9.3	-13	0.25	0.9	-14	2.42	-34	-4.6	-29	
WORST																														



Color	Asset Class	Total Return (%)	Std Dev (%)	Sharpe Ratio
	Cash	2.72%	2.30%	0.00
	S&P 500	10.17%	17.84%	0.42
	REIT	10.66%	19.35%	0.41
	Russell 1000	10.44%	22.01%	0.34
	Small Stocks	9.92%	18.72%	0.38
	Commodities	1.13%	25.19%	-0.06
	EAFE	5.62%	18.58%	0.16
	Bonds - Agg	4.98%	5.85%	0.39
	Munis	4.98%	5.66%	0.40
	High Yield	8.12%	15.33%	0.35
	USTreasuries	6.24%	13.34%	0.26
	Emerging Mkts	15.90%	43.84%	0.30

\* - Incomplete data since Start Year



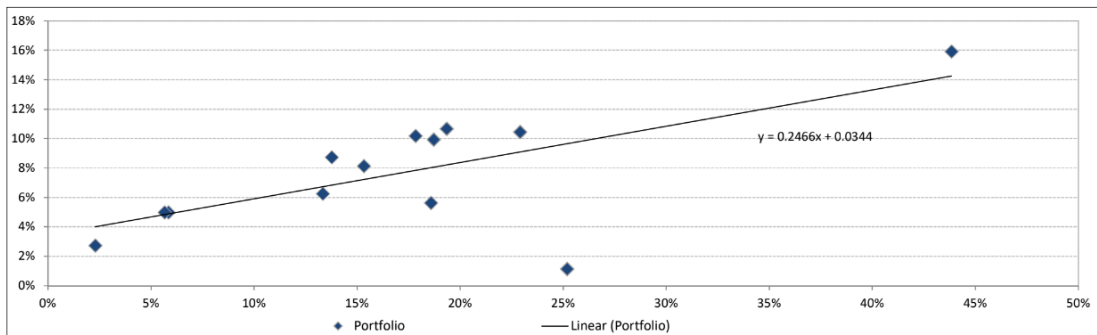
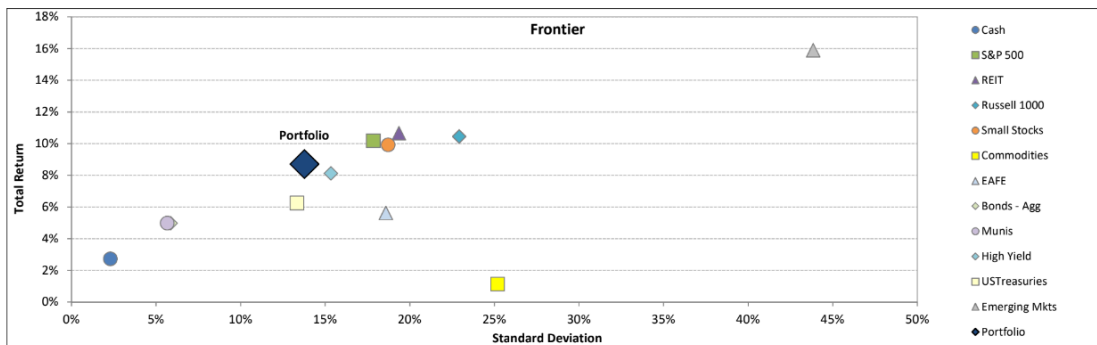
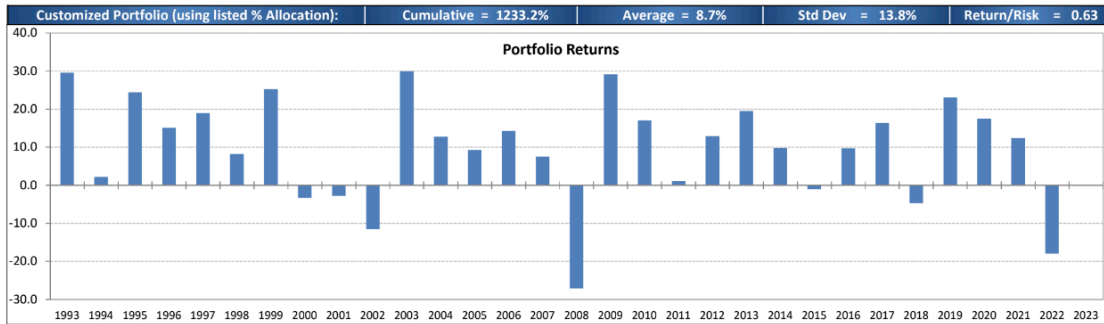


## Exhibit 3

### Portfolio Frontier

Bloomberg

### Asset Allocation Calculator



## Exhibit 4

### Scenario Analysis

#### Bloomberg

#### Asset Allocation Calculator

This spreadsheet allows the user to compute potential portfolio returns based on 2 methodologies depending on the specificity of the probabilities. By no means, is it a guarantee of future returns.  
Two rules of Thumb: Stocks have, over the long-run, returned 6.4% above inflation. Over the long-term, inflation + market multiple in US ~ 20%

##### 1. Calculations done based on Portfolio Specific Probabilities:

Asset Class	% Allocation	Assumed Annual Returns (%)					Probabilities (%)					Forecasted Returns	Asset Class Contribution (bp)	Sum of Probability %
		Best	High	Average	Low	Worst	Best	High	Average	Low	Worst			
Cash (Bloomberg: SPBDUB6T Index )	10	25	18	7.5	-14	-30	5	20	50	20	5	4.30%	43	100%
S&P 500 (Bloomberg: SPTR Index )	20	25	19	7.5	-15	-30	5	20	50	20	5	4.30%	86	100%
REIT (Bloomberg: FNERTR Index )	5	25	18	7.5	-14	-30	5	20	50	20	5	4.30%	21.5	100%
Russell 1000 (Bloomberg: RUMCGRTR Index )	20	30	25	8	-20	-40	5	20	50	20	5	4.50%	90	100%
Small Stocks (Bloomberg: RU20INTR Index )	15	30	20	4	-15	-35	5	20	50	20	5	2.75%	41.25	100%
Commodities (Bloomberg: SPGSCITR Index )	0	25	25	6.5	-22	-35	5	20	50	20	5	3.35%	0	100%
EAFE (Bloomberg: GDDUEAFE Index )	0	3	1	0.5	0	0	5	20	50	20	5	0.60%	0	100%
Bonds - Agg (Bloomberg: LBSTRUU Index )	10	4	3	2.5	-5	-8	5	20	50	20	5	0.65%	6.5	100%
Munis (Bloomberg: LMBITR Index )	0	4	2.5	2	-4	-10	5	20	50	20	5	0.40%	0	100%
High Yield (Bloomberg: LF98TRUU Index )	5	20	18	4	-14	-25	5	20	50	20	5	2.55%	12.75	100%
USTreasuries (Bloomberg: LUTLTRUU Index )	5	5	3.5	2	-7	-8	5	20	50	20	5	0.15%	0.75	100%
Emerging Mkts (Bloomberg: GDLEEGF Index )	10	50	35	9	-32	-40	5	20	50	20	5	5.60%	56	100%
Portfolio Total Return (%)		3.58%												

##### 2. Calculations done based on Asset Classes Specific Probabilities:

Asset Class	% Allocation	Assumed Annual Returns (%)				Assumed Alloc (%)	Historical Returns (20 Yr)			Historical Returns (10 Yr)			Returns Based on Stand Deviation		
		High	Medium	Low	Alloc (%)		High	CAGR	Low	High	CAGR	Low	High	CAGR	Low
Cash (Bloomberg: SPBDUB6T Index )	10	18	7.5	-14	10		5.4%	1.4%	0.1%	2.4%	0.8%	0.1%	4.6%	1.4%	-1.8%
S&P 500 (Bloomberg: SPTR Index )	20	19	7.5	-15	20		32.4%	9.8%	-37.0%	32.4%	12.6%	-18.1%	44.2%	9.8%	-24.6%
REIT (Bloomberg: FNERTR Index )	5	18	7.5	-14	5		41.3%	9.4%	-37.7%	41.3%	7.1%	-24.9%	52.6%	9.4%	-33.8%
Russell 1000 (Bloomberg: RUMCGRTR Index )	20	25	8	-20	20		46.3%	10.9%	-44.3%	35.7%	11.4%	-26.7%	55.5%	10.9%	-33.8%
Small Stocks (Bloomberg: RU20INTR Index )	15	20	4	-15	15		47.3%	9.4%	-33.8%	38.8%	9.0%	-20.4%	48.7%	9.4%	-30.0%
Commodities (Bloomberg: SPGSCITR Index )	0	25	6.5	-22	0		40.4%	-0.3%	-46.5%	40.4%	-3.3%	-33.1%	47.1%	-0.3%	-47.7%
EAFE (Bloomberg: GDDUEAFE Index )	0	1	0.5	0	0		39.2%	6.9%	-43.1%	25.6%	5.2%	-14.0%	45.8%	6.9%	-32.0%
Bonds - Agg (Bloomberg: LBSTRUU Index )	10	3	2.5	-5	10		8.7%	3.1%	-13.0%	8.7%	1.1%	-13.0%	12.8%	3.1%	-6.6%
Munis (Bloomberg: LMBITR Index )	0	2.5	2	-4	0		12.9%	3.6%	-8.5%	9.1%	2.1%	-8.5%	13.3%	3.6%	-6.1%
High Yield (Bloomberg: LF98TRUU Index )	5	18	4	-14	5		58.2%	7.3%	-26.2%	17.1%	4.0%	-11.2%	40.1%	7.3%	-25.6%
USTreasuries (Bloomberg: LUTLTRUU Index )	5	3.5	2	-7	5		29.9%	4.1%	-29.3%	25.1%	0.6%	-29.3%	32.1%	4.1%	-23.9%
Emerging Mkts (Bloomberg: GDLEEGF Index )	10	35	9	-32	10		62.8%	10.0%	-45.7%	31.0%	5.0%	-15.2%	58.8%	10.0%	-38.8%

Years: 2002 to 2022

Years: 2012 to 2022

Total	100
% Equity	45

Portfolio Returns:		Probabilities (%):	
"High" Case	19.38%	25	
"Medium" Case	6.28%	50	
"Low" Case	-16.10%	25	

Average	3.18%
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Portfolio Total Return (%)	3.96%
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Return Grid:		Annual Returns: (\$)							
Portfolio Size (\$MM):		2.00%	3.00%	4.00%	5.00%	6.00%	7.00%	8.00%	9.00%
\$ 500,000	\$ 10,000	\$ 15,000	\$ 20,000	\$ 25,000	\$ 30,000	\$ 35,000	\$ 40,000	\$ 45,000	
\$ 1,000,000	\$ 20,000	\$ 30,000	\$ 40,000	\$ 50,000	\$ 60,000	\$ 70,000	\$ 80,000	\$ 90,000	
\$ 2,000,000	\$ 40,000	\$ 60,000	\$ 80,000	\$ 100,000	\$ 120,000	\$ 140,000	\$ 160,000	\$ 180,000	
\$ 3,000,000	\$ 60,000	\$ 90,000	\$ 120,000	\$ 150,000	\$ 180,000	\$ 210,000	\$ 240,000	\$ 270,000	
\$ 4,000,000	\$ 80,000	\$ 120,000	\$ 160,000	\$ 200,000	\$ 240,000	\$ 280,000	\$ 320,000	\$ 360,000	
\$ 5,000,000	\$ 100,000	\$ 150,000	\$ 200,000	\$ 250,000	\$ 300,000	\$ 350,000	\$ 400,000	\$ 450,000	
\$ 7,000,000	\$ 140,000	\$ 210,000	\$ 280,000	\$ 350,000	\$ 420,000	\$ 490,000	\$ 560,000	\$ 630,000	
\$ 10,000,000	\$ 200,000	\$ 300,000	\$ 400,000	\$ 500,000	\$ 600,000	\$ 700,000	\$ 800,000	\$ 900,000	

## Exhibit 5

### Tax Rates

#### Federal Tax rate

##### 2022 Single Filer Tax Brackets

If taxable income is:	The tax due is:
Not over \$10,275	10% of the taxable income
Over \$10,275 but not over \$41,775	\$1,027.50 plus 12% of the excess over \$10,275
Over \$41,775 but not over \$89,075	\$4,807.50 plus 22% of the excess over \$41,775
Over \$89,075 but not over \$170,050	\$15,213.50 plus 24% of the excess over \$89,075
Over \$170,050 but not over \$215,950	\$34,647.50 plus 32% of the the excess over \$170,050
Over \$215,950 but not over \$539,900	\$49,335.50 plus 35% of the excess over \$215,950
Over \$539,900	\$162,718 plus 37% of the excess over \$539,900

Source: Forbes

#### State Tax rate

##### State taxes

Marginal tax rate

**4.95%**

Effective tax rate ⓘ

**4.78%**

source: Forbes

## Exhibit 6

### Risk Surveys



University of Missouri

You have a **HIGH** tolerance for risk.

Key	
Score	Level
33-47	You have a high tolerance for risk.
29-32	You have an above-average tolerance for risk.
23-28	You have an average/moderate tolerance for risk.
19-22	You have a below-average tolerance for risk.
0-18	You have a low tolerance for risk.

#### Risk Tolerance Questionnaire Results

[« Previous Page](#)

Your Risk Tolerance is: **Moderate**

Conservative Moderate Aggressive



Risk Tolerance Score

#### POTENTIAL ASSET ALLOCATIONS FOR **Moderate** INVESTORS

Bright Start has two Moderate Age-Based Options:

- **Index Age-Based Moderate** (*invests in Vanguard mutual funds*)
- **Moderate Age-Based** (*multi-firm strategy, invests in multiple mutual fund families*)

Additional information can be found on the [Age-Based Portfolios](#) page along with asset allocations for the Conservative and Aggressive Age-Based Portfolios.

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## Exhibit 7

### Life Expectancy Survey

#### LIFESPAN CALCULATOR

**ESTIMATED AGE**

**83**

**YEARS**

**Congratulations!**

You have calculated your longevity. For more than 160 years, Northwestern Mutual has helped people manage risks and achieve financial security. How could you improve your estimated\* age? Are you financially prepared to live that long?

Thank you for taking the test. Don't stop now!

- [Share](#) the Lifespan Calculator with friends

\* The calculator may not provide accurate results for individuals who have a chronic illness

Source: nmfn.com