Investing Basics for all

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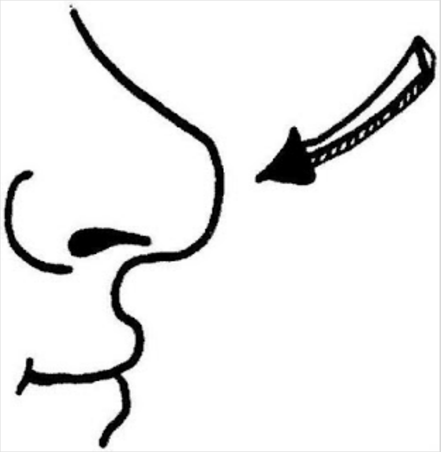
UD – Osher Lifelong Learning Institute

April, 2025

Disclaimer in plain language

Disclaimer – in plain language:



Opinions are like noses, everyone has one !

You are going to see mine in this course !!

I am simply sharing my perspective.

This is not investment advice or recommendation.

Rajeev is not a financial advisor.

This course is for educational purposes only.

Form your own opinion, make your own investment decisions.

Session 5 – April 30th

- Asset Allocation and location

Focusing on high return is not enough

You need a plan to manage your risk, your behavior, and your tax bill!

Nobel Prize 1990 - Modern Portfolio Theory

Buying Good Investments Is Not Enough

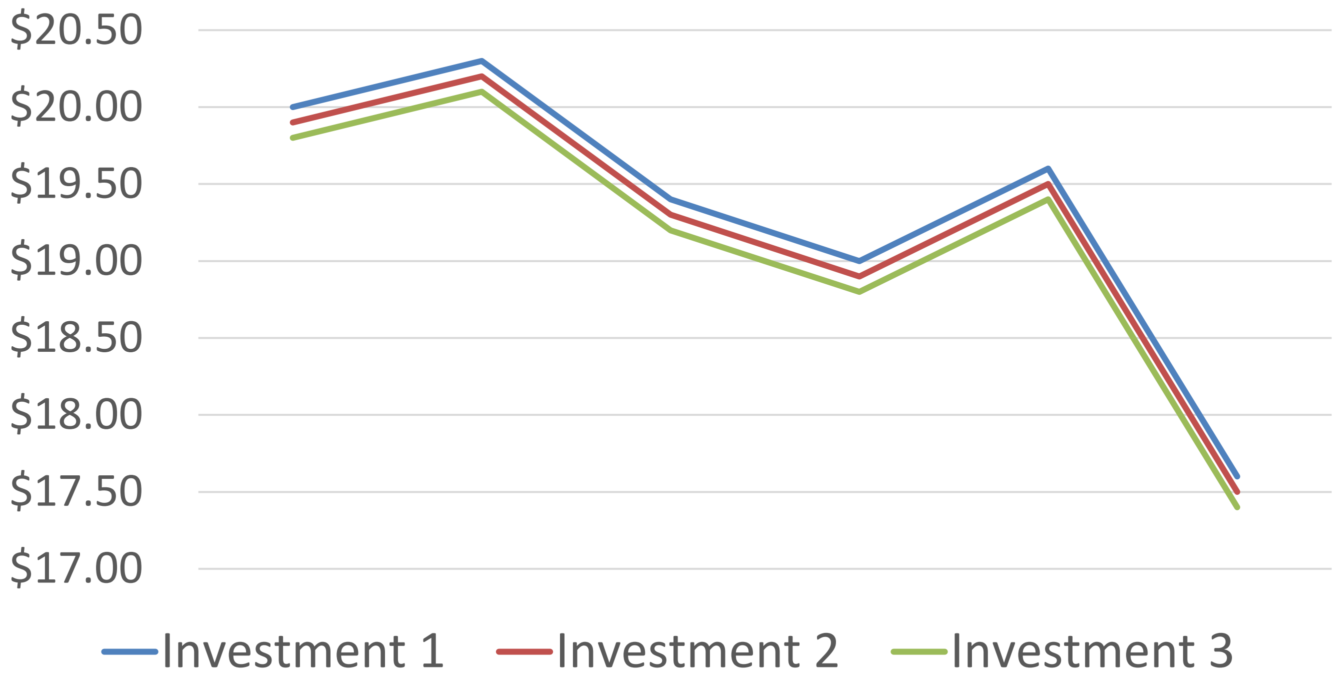
"A good portfolio is more than a long list of good stocks and bonds.

It is a balanced whole, providing the investor with protections and opportunities with respect to a wide range of contingencies."

- Harry Markowitz

Investments That Behave THE SAME Do Not Lower Volatility

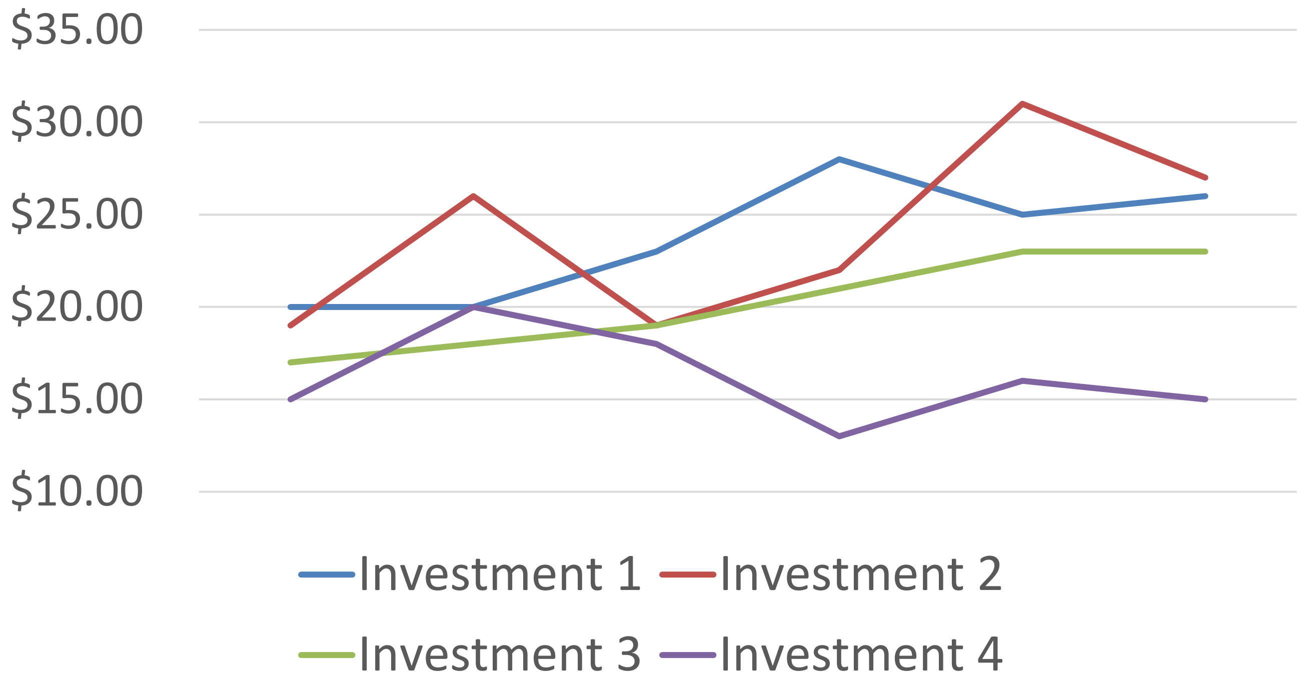
Positively Correlated



Investments That Behave THE OPPOSITE Eliminate Volatility
Negatively Correlated

Investments That Behave <u>INDEPENDENTLY</u>

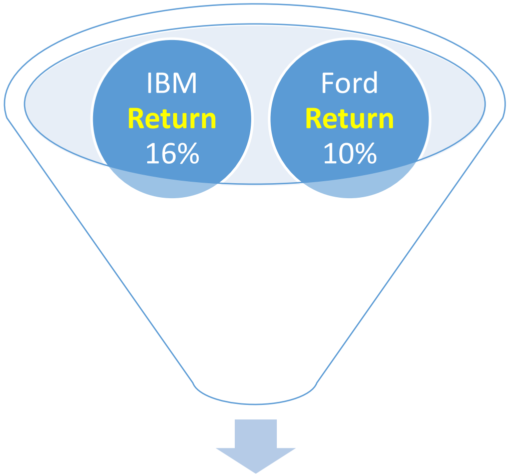
No Correlation = Holy Grail



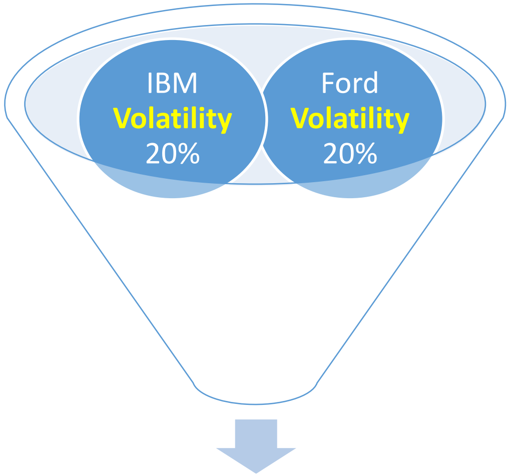
Reduce, But Don't Eliminate Volatility.

Average's Don't Work For Calculating Risk

Consider a Portfolio Invested Half In IBM and Half In Ford



Portfolio Return = 13%



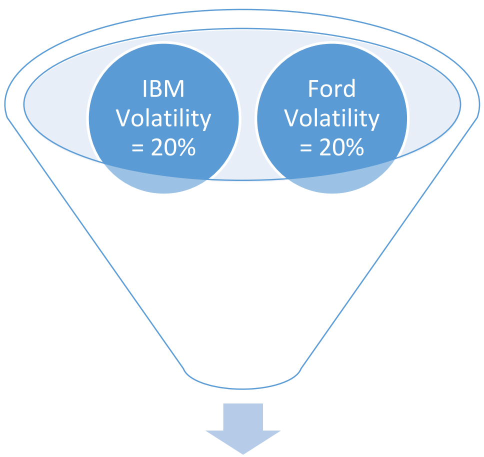
Portfolio Volatility = **???**

Depends On The Correlation

The Riskiness Of Your Portfolio

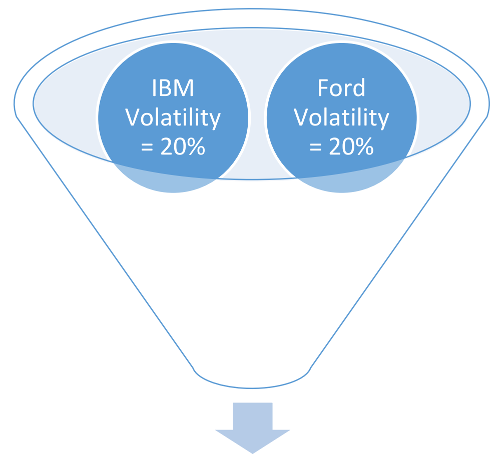
Depends On The Correlation Of Your Investments

If IBM and Ford are <u>Positively Correlated</u>
(i.e. They Behave the Same)



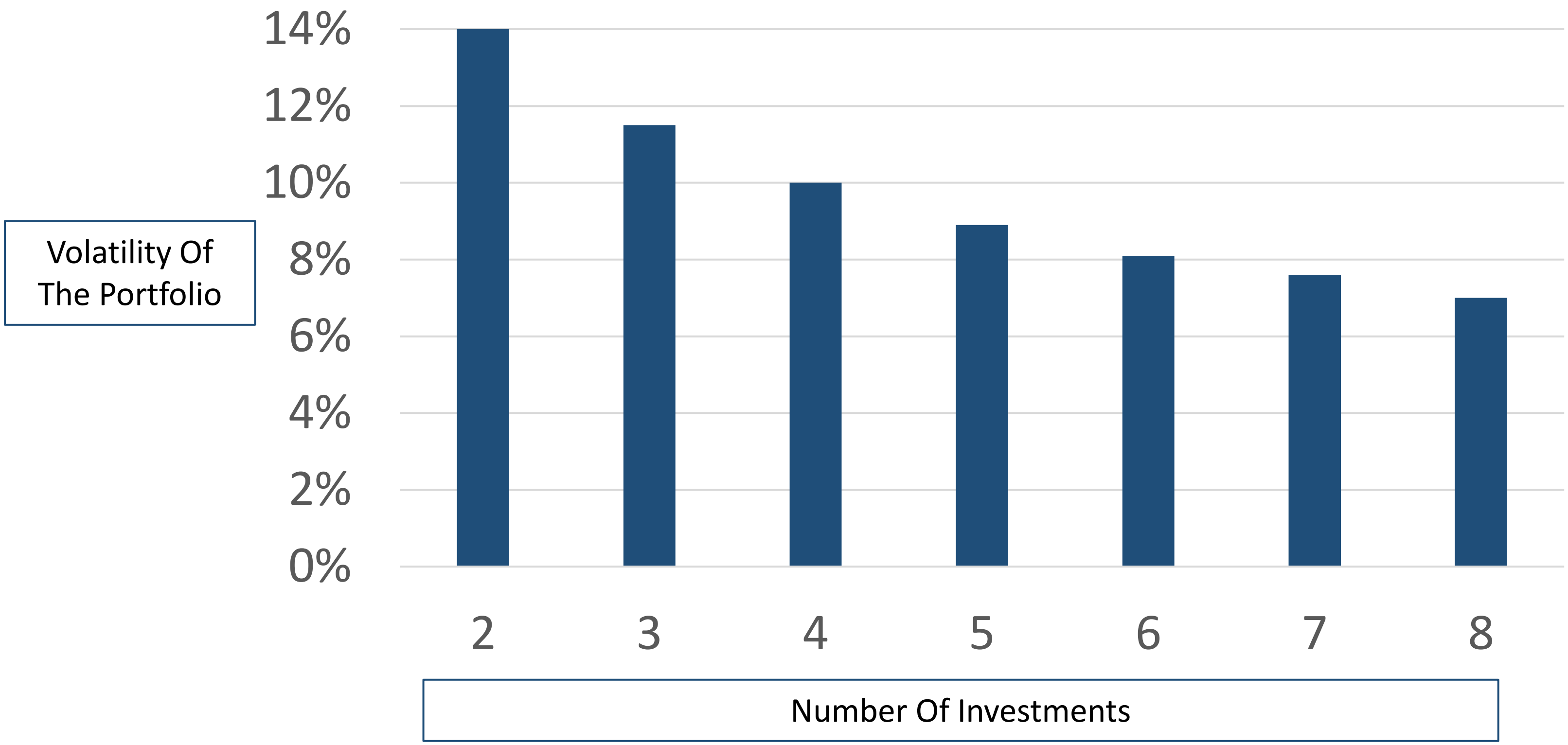
Portfolio Volatility = **20%**

If IBM and Ford have <u>No Correlation</u>
(i.e. They Behave Independently)



Portfolio Volatility = **14%**

Each Investment Has 20% Volatility BUT No Correlation To Each Other



Owning Investments That Are Not Correlated Lowers Risk

Return and Risk

Consider Both!

Investment A

Potential Return = 10%

Risk or Volatility or
Standard Deviation σ = 9%

Return / Risk Ratio = 1.1%

Investment B

Potential Return = 14%

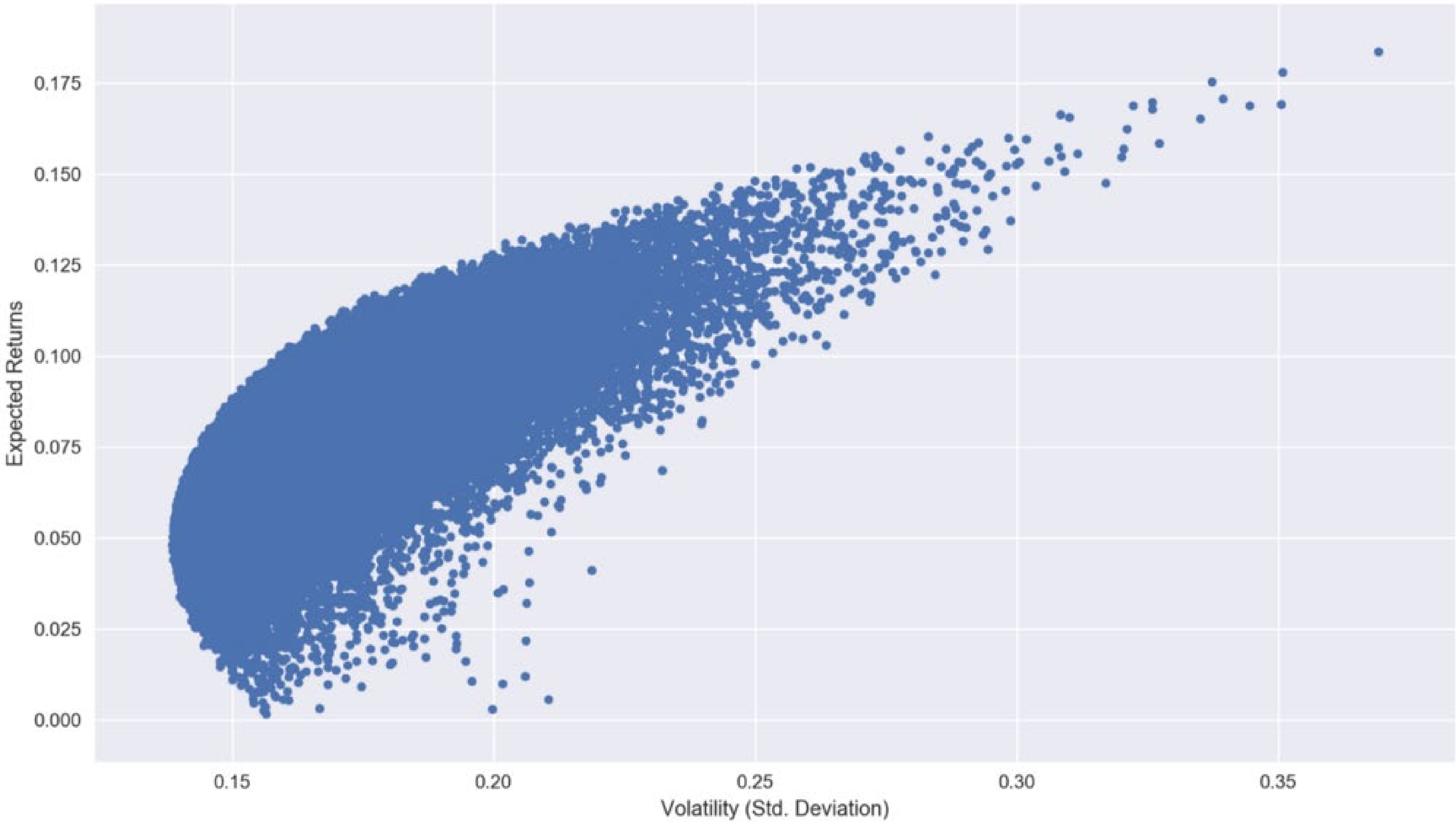
Risk or Volatility or
Standard Deviation σ = 17%

Return / Risk Ratio = 0.8%

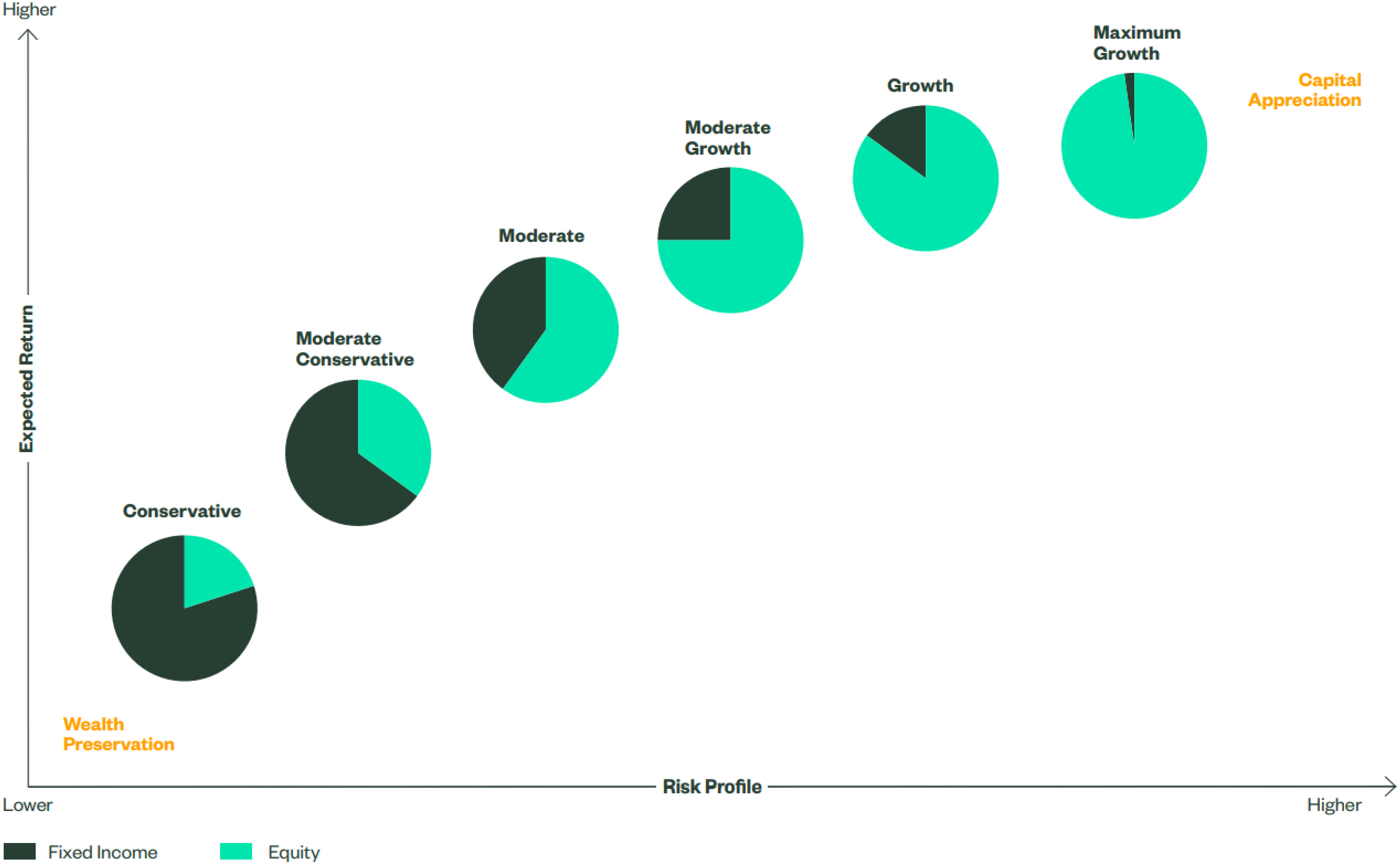
Goal: Get The Most Return For Every Unit Of Risk You Take !

Always Consider How Much Risk You Take On To Get Your Desired Return

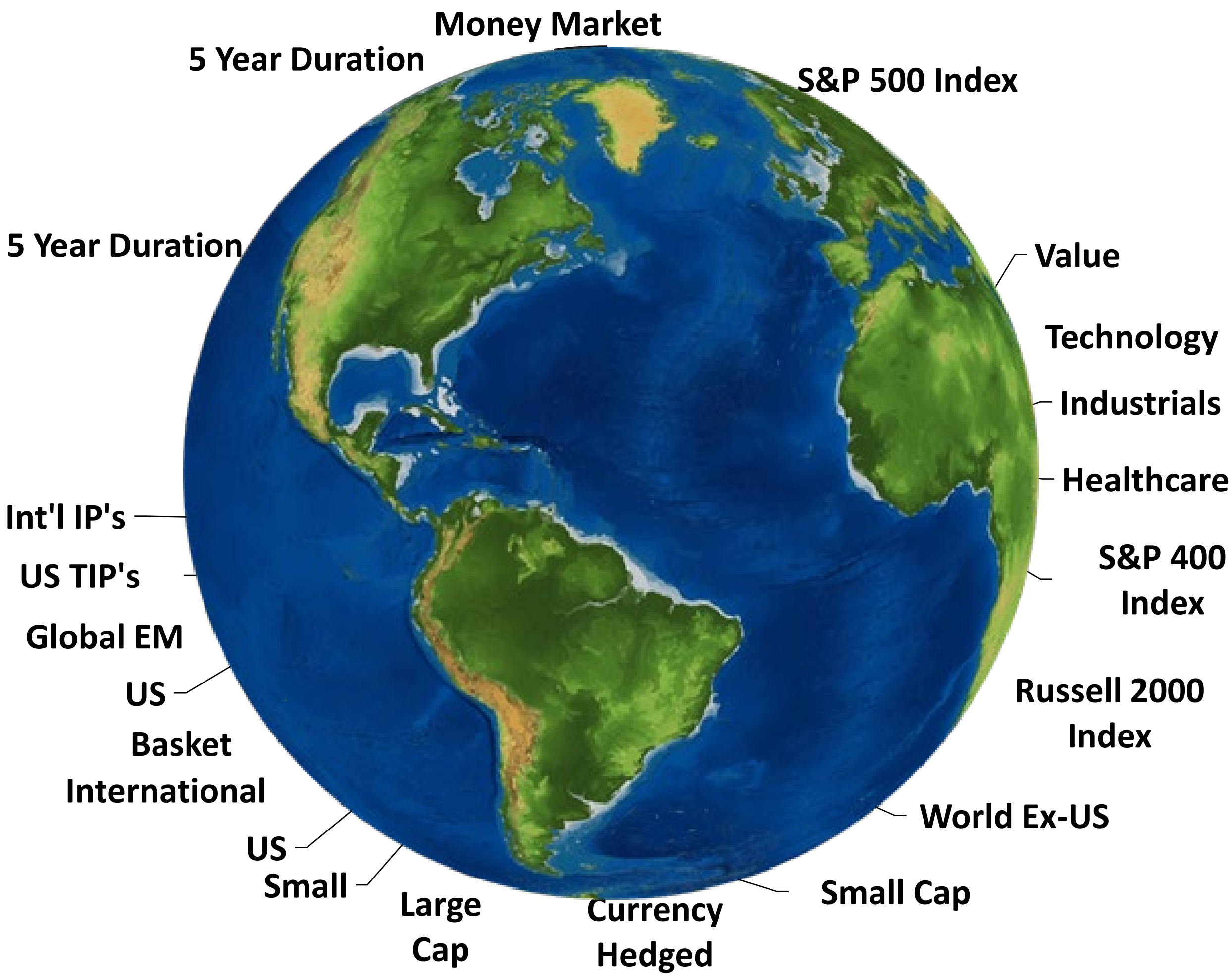
The Efficient Frontier



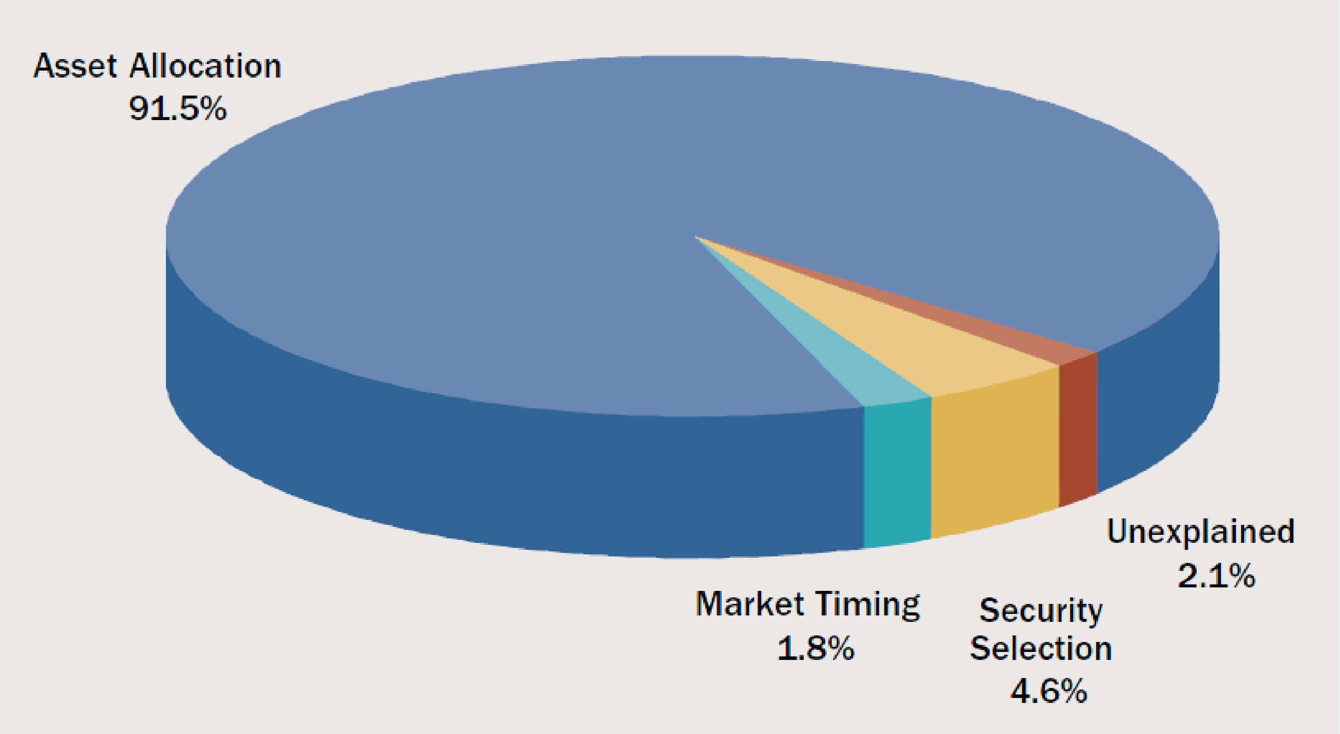
The Efficient Frontier



Globally Diversified, Multi Asset Class Portfolio



Determinants Of Portfolio Return Variation



Research has shown that asset allocation has a far greater effect on the variability of returns than picking the right stock/mutual fund or timing the market.

Source: Ibbotson Associates, Chicago

What Is The Best Recipe For Chocolate Chip Cookies?

	Chips Ahoy!	Mrs. Fields	Famous Amos Cookies
	12 ounces	14 ounces	10 ounces
	¼ cup	½ cup	1 cup
 	1 cup	¾ cup	1 cup

So What Is The Best Allocation For Your Portfolio?

		BlackRock	State Street	Vanguard
Stocks	US Large	30%	25%	29%
	US Mid & Small	7%	7%	6%
	Developed International	20%	12%	19%
	Emerging Markets	5%	5%	5%
	Real Estate	3%	9%	
	Commodities		5%	
Bonds	US Treasuries	9%	11%	12%
	US Investment Grade	14%	19%	17%
	US High Yield	2%	7%	
	International	10%		12%
		100%	100%	100%

As of 4/2018

VANGUARD ETF® STRATEGIC MODEL PORTFOLIOS

CRSP

The Center for Research in Security Prices (CRSP) index series

A total-return model series serving up broad-market global equities and fixed income exposure, with the U.S. equities component using ETFs built around CRSP indexes.

- Broad-market equity and investment-grade[1] fixed income exposure, encompassing more than 26,000 global stocks and bonds.
- Diversified index investments that can help alleviate active manager risk in portfolios through lower return variability and low turnover.
- ETFs for potential tax efficiency, transparency, and low costs.
- Remarkably low costs, with weighted average expense ratios at 0.05%, enabling investors to keep more of their returns.
- Vanguard's 45+ years of experience in portfolio construction and indexing.

Strategic asset allocation by product
As of December 31, 2024

Asset allocation (%)[2] ● Equity / ● Fixed income

VANGUARD ETF	TICKER	EXPENSE RATIO[3]	0/100	10/90	20/80	30/70	40/60	50/50	60/40	70/30	80/20	90/10	100/0
Domestic equity													
Growth	VUG	0.04%	0.0%	3.0%	6.0%	8.9%	11.9%	14.9%	17.9%	20.8%	23.8%	26.8%	29.8%
Value	VTV	0.04%	0.0%	2.3%	4.5%	6.8%	9.0%	11.3%	13.6%	15.8%	18.1%	20.4%	22.6%
Small-Cap	VB	0.05%	0.0%	0.6%	1.3%	1.9%	2.6%	3.2%	3.8%	4.6%	5.1%	5.7%	6.4%
International equity													
FTSE Developed Markets	VEA	0.06%	0.0%	2.8%	5.7%	8.5%	11.3%	14.1%	17.0%	19.8%	22.6%	25.4%	28.3%
FTSE Emerging Markets	VWO	0.08%	0.0%	1.1%	2.1%	3.3%	4.4%	5.5%	6.5%	7.6%	8.8%	9.9%	10.9%
Domestic fixed income													
Short-Term Bond	BSV	0.04%	28.0%	25.2%	22.4%	19.6%	16.8%	14.0%	11.2%	8.4%	5.6%	2.8%	0.0%
Inter-Term Bond	BIV	0.04%	13.5%	12.1%	10.8%	9.4%	8.1%	6.7%	5.4%	4.0%	2.7%	1.3%	0.0%
Long-Term Bond	BLV	0.04%	13.2%	11.9%	10.6%	9.3%	8.0%	6.6%	5.2%	4.0%	2.6%	1.4%	0.0%
Mortgage-Backed Sec	VMBS	0.04%	13.9%	12.5%	11.1%	9.7%	8.3%	7.0%	5.6%	4.2%	2.8%	1.4%	0.0%
International fixed income													
Total International Bond	BNDX	0.07%	29.4%	26.5%	23.5%	20.6%	17.6%	14.7%	11.8%	8.8%	5.9%	2.9%	0.0%
Money market													
Federal Money Market Fund	VMFXX	0.11%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Weighted average expense ratio			0.05%	0.05%	0.05%	0.05%	0.05%	0.05%	0.05%	0.05%	0.05%	0.05%	0.05%

1 A bond whose credit quality is considered to be among the highest by independent bond-rating agencies.

2 The weights were determined based on market characteristics, Vanguard philosophy, and the availability of the funds in the Vanguard lineup. Some of the investable universe may be lost when moving from a broad fund to a group of narrower funds. Portfolio weights were determined by dividing the market value of the underlying benchmark by the total market value of all the underlying benchmarks within the asset group. Because of rounding, weights may not add up to 100%.

3 As reported in each ETF's most recent prospectus as of December 31, 2024. The current expense ratio may be higher or lower than the figure shown.

Source: Vanguard calculations using data from FactSet.

Ticker	Asset Class	Conservative (%) 20/80	Moderate Conservative (%) 40/60	Moderate (%) 60/40	Moderate Growth (%) 75/25	Growth (%) 90/10	Maximum Growth (%) 98/2
	Equity	**19.5**	**38.5**	**57.5**	**72.5**	**87.5**	**93.0**
SPY	SPDR® S&P 500® ETF Trust	8.8	13.8	18.5	21.2	25.0	25.5
SPEM	SPDR® Portfolio Emerging Markets ETF	4.0	8.5	10.5	12.5	14.5	15.0
XLSR	SPDR® SSGA US Sector Rotation ETF	3.8	8.8	13.5	16.2	19.5	21.0
SPSM	SPDR® Portfolio S&P 600™ Small Cap ETF	2.0	3.0	4.0	5.2	6.5	6.5
SPMD	SPDR® Portfolio S&P 400™ Mid Cap ETF	1.0	1.5	2.5	3.8	4.5	6.0
GWX	SPDR® S&P® International Small Cap ETF	0.0	2.0	2.0	3.0	3.5	4.0
SPDW	SPDR® Portfolio Developed World ex-US ETF	0.0	1.0	6.5	10.5	14.0	15.0
	Fixed Income	**73.5**	**54.5**	**35.5**	**20.5**	**6.5**	**0.0**
FISR	SPDR® SSGA Fixed Income Sector Rotation ETF	29.5	22.2	12.0	1.0	0.0	0.0
SPAB	SPDR® Portfolio Aggregate Bond ETF	11.0	3.8	0.0	0.0	0.0	0.0
JNK	SPDR® Bloomberg High Yield Bond ETF	9.5	8.0	7.5	7.0	2.5	0.0
TIPX	SPDR® Bloomberg 1-10 Year TIPS ETF	6.0	4.5	2.0	0.0	0.0	0.0
BIL	SPDR® Bloomberg 1-3 Month T-Bill ETF	5.0	5.0	5.0	5.0	4.0	0.0
EBND	SPDR® Bloomberg Emerging Markets Local Bond ETF	4.0	3.5	3.0	1.5	0.0	0.0
EMHC	SPDR® Bloomberg Emerging Markets USD Bond ETF	3.0	2.0	1.5	1.5	0.0	0.0
SPIB	SPDR® Portfolio Intermediate Term Corporate Bond ETF	3.0	3.0	3.0	3.0	0.0	0.0
SRLN	SPDR® Blackstone Senior Loan ETF	2.5	2.5	1.5	1.5	0.0	0.0
	Real Assets	**5.0**	**5.0**	**5.0**	**5.0**	**4.0**	**5.0**
GLD	SPDR® Gold Shares	3.0	3.0	3.0	3.0	2.0	2.0
CERY	SPDR® Bloomberg Enhanced Roll Yield Commodity Strategy No K-1 ETF	2.0	2.0	2.0	2.0	2.0	2.0
RWR	SPDR® Dow Jones® REIT ETF	0.0	0.0	0.0	0.0	0.0	0.5
RWX	SPDR® Dow Jones® International Real Estate ETF	0.0	0.0	0.0	0.0	0.0	0.5
	Cash	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**
	Cash	2.0	2.0	2.0	2.0	2.0	2.0

That's it for Asset Allocation

Now onto Asset Location

Example: 70/30 Allocation
Maintain 70/30 Allocation In All Accounts

Taxable Brokerage Account

Traditional IRA

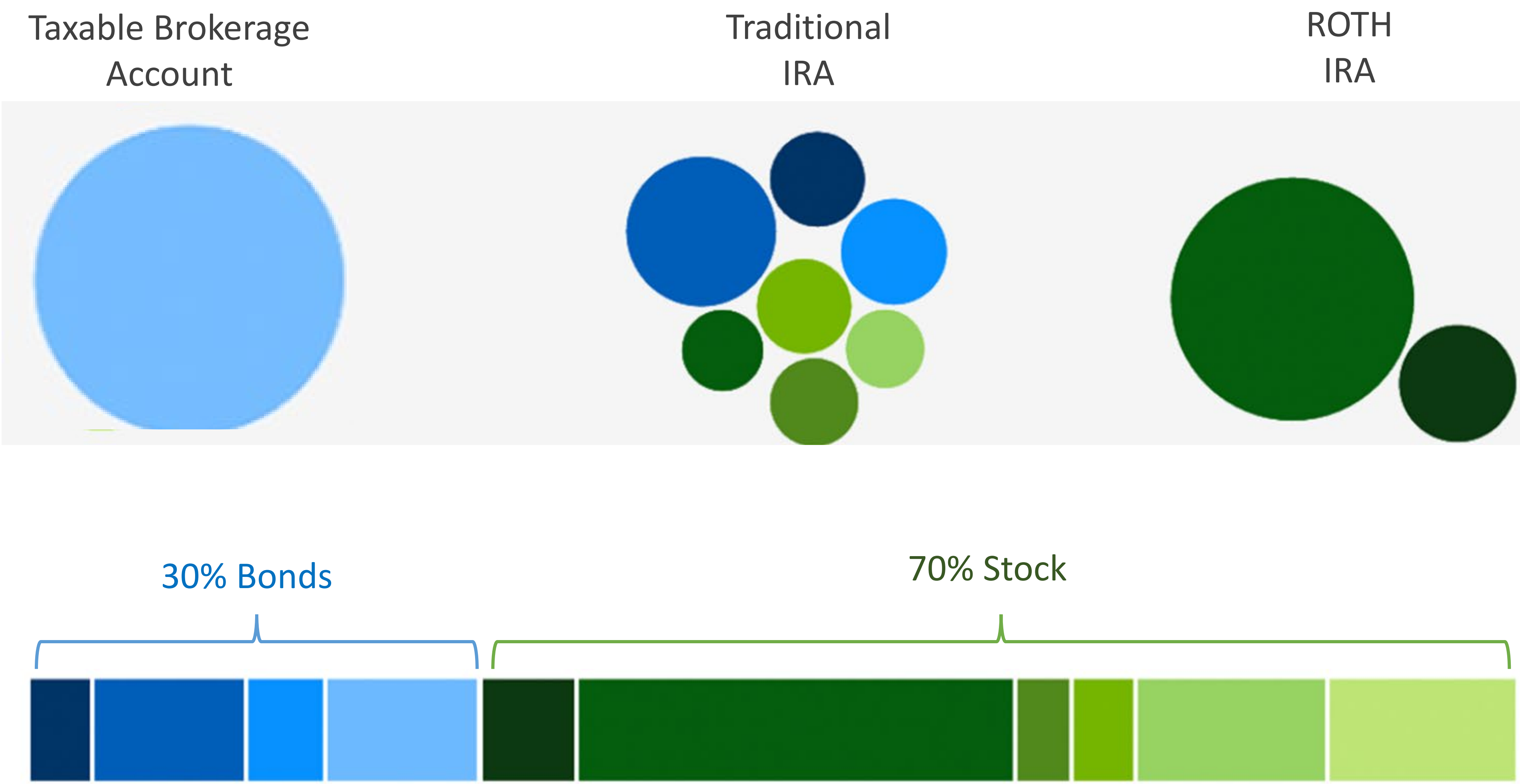
ROTH IRA

30% Bonds

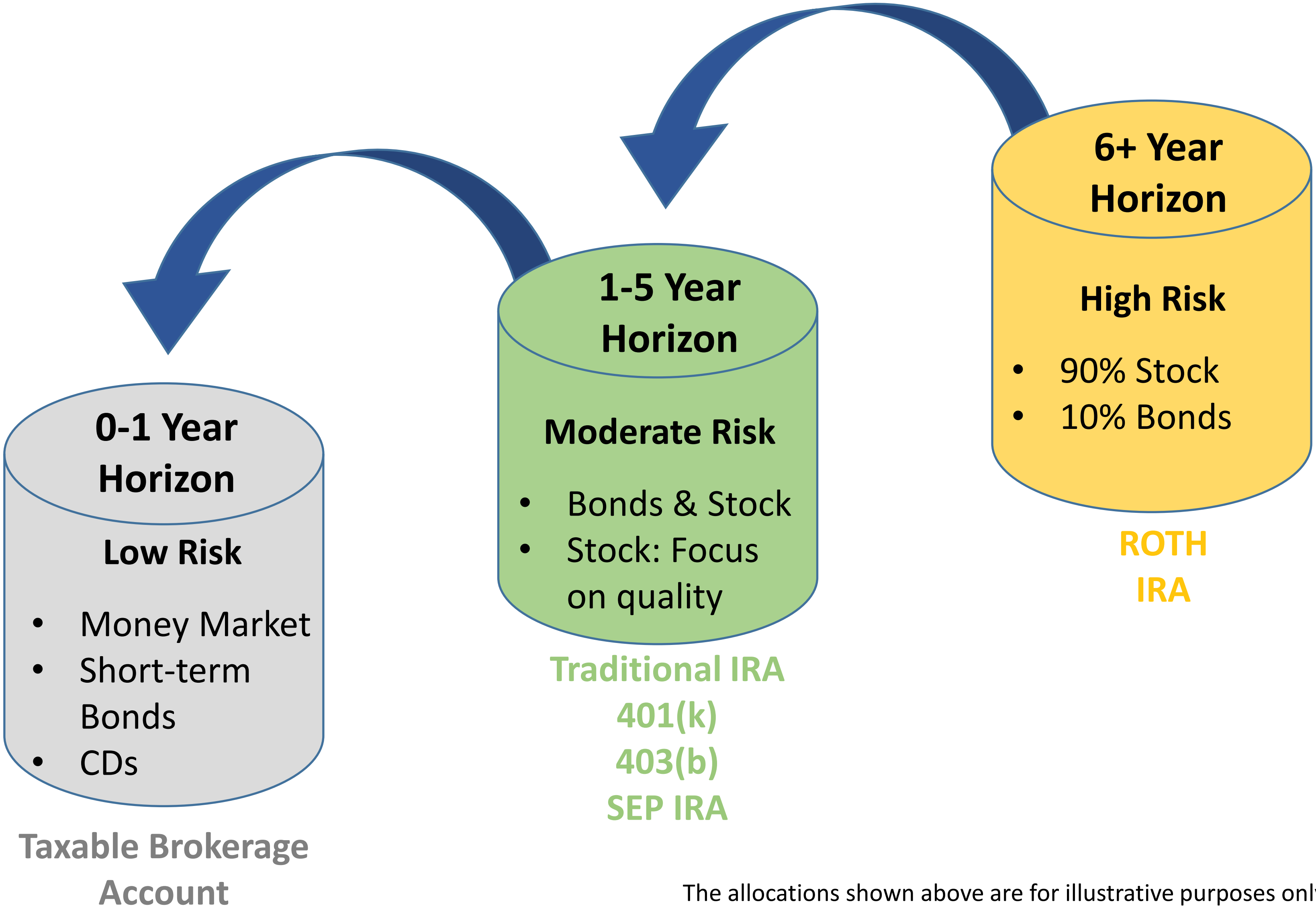
70% Stock

Asset Location

Maintain 70/30 Allocation Overall



Asset Location Based On Time



The allocations shown above are for illustrative purposes only.
Each investor has a different tolerance for time horizon and risk.

Cumulative Principle Of Mathematics

Year	Return	$500,000
2000	-9.0%	$454,841
2001	-11.8%	$400,943
2002	-22.0%	$312,872
2003	28.4%	$401,589
2004	10.7%	$444,731
2005	4.8%	$466,232
2006	15.6%	$539,022
2007	5.5%	$568,586
2008	-36.6%	$360,755
2009	25.9%	$454,317
2010	14.8%	$521,652
2011	2.1%	$532,598
2012	15.9%	$617,231
2013	32.1%	$815,641
2014	13.5%	$925,951
2015	1.4%	$938,719
2016	11.8%	$1,049,235
2017	21.6%	$1,276,302

Return Reversed	$500,000
21.6%	$608,206
11.8%	$679,810
1.4%	$689,184
13.5%	$782,392
32.1%	$1,033,893
15.9%	$1,198,185
2.1%	$1,223,327
14.8%	$1,404,638
25.9%	$1,768,934
-36.6%	$1,122,347
5.5%	$1,183,905
15.6%	$1,368,743
4.8%	$1,434,914
10.7%	$1,589,064
28.4%	$2,039,656
-22.0%	$1,591,624
-11.8%	$1,403,020
-9.0%	$1,276,302

"<u>Sequence of Return Risk</u>"
Is Not A Concern
When You Are
Younger And Saving

It Becomes A Concern
Once You Start <u>Spending</u>
From Your Savings

Sequence of Return Risk

This Time…

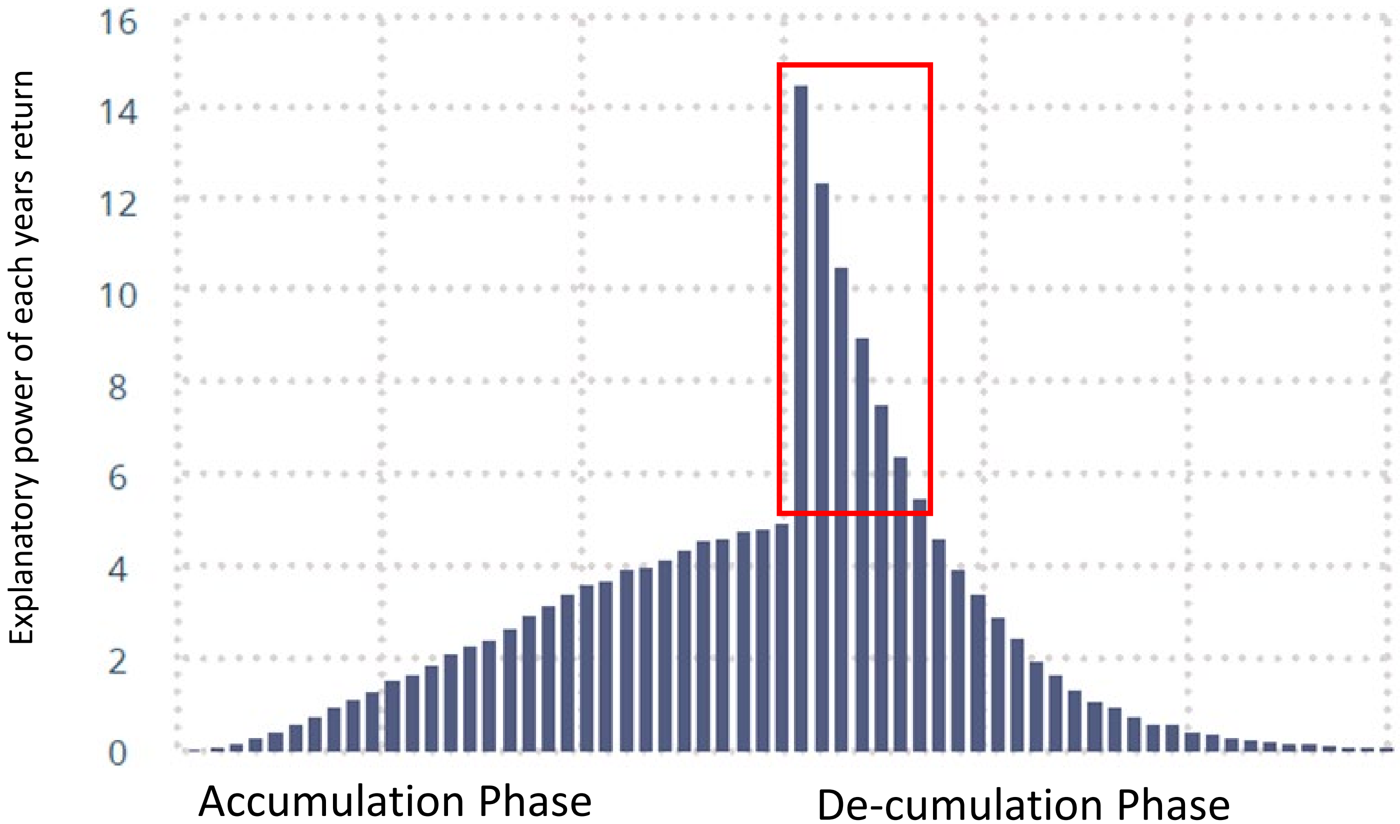
Assume $20,000 Withdrawals Each Year

Year	Return	$500,000
2000	-9.0%	$434,841
2001	-11.8%	$363,313
2002	-22.0%	$263,508
2003	28.4%	$318,227
2004	10.7%	$332,414
2005	4.8%	$328,484
2006	15.6%	$359,769
2007	5.5%	$359,502
2008	-36.6%	$208,095
2009	25.9%	$242,065
2010	14.8%	$257,942
2011	2.1%	$243,355
2012	15.9%	$262,025
2013	32.1%	$326,253
2014	13.5%	$350,377
2015	1.4%	$335,209
2016	11.8%	$354,673
2017	21.6%	$411,428

Return Reversed	$500,000
21.6%	$588,206
11.8%	$637,456
1.4%	$626,246
13.5%	$690,942
32.1%	$893,046
15.9%	$1,014,956
2.1%	$1,016,253
14.8%	$1,146,873
25.9%	$1,424,317
-36.6%	$883,696
5.5%	$912,164
15.6%	$1,034,577
4.8%	$1,064,593
10.7%	$1,158,960
28.4%	$1,467,592
-22.0%	$1,125,220
-11.8%	$971,884
[illegible]	$864,105

Sequence Risk

Matters Most During The First 5 Years Of Portfolio Withdrawals



Asset class returns

2010–2024 Ann.	2010–2024 Vol.	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	YTD
Large Cap 13.9%	Small Cap 20.6%	REITs 27.9%	REITs 8.3%	REITs 19.7%	Small Cap 38.8%	REITs 28.0%	REITs 2.8%	Small Cap 21.3%	EM Equity 37.8%	Cash 1.8%	Large Cap 31.5%	Small Cap 20.0%	REITs 41.3%	Comdty. 16.1%	Large Cap 26.3%	Large Cap 25.0%	Comdty. 2.1%
Small Cap 10.3%	EM Equity 17.9%	Small Cap 26.9%	Fixed Income 7.8%	High Yield 19.6%	Large Cap 32.4%	Large Cap 13.7%	Large Cap 1.4%	High Yield 14.3%	DM Equity 25.6%	Fixed Income 0.0%	REITs 28.7%	EM Equity 18.7%	Large Cap 28.7%	Cash 1.5%	DM Equity 18.9%	Small Cap 11.5%	Fixed Income 1.8%
REITs 9.4%	REITs 16.8%	EM Equity 19.2%	High Yield 3.1%	EM Equity 18.6%	DM Equity 23.3%	Fixed Income 6.0%	Fixed Income 0.5%	Large Cap 12.0%	Large Cap 21.8%	REITs -4.0%	Small Cap 25.5%	Large Cap 18.4%	Comdty. 27.1%	High Yield -12.7%	Small Cap 16.9%	Asset Alloc. 10.0%	Cash 1.1%
Asset Alloc. 7.2%	DM Equity 16.5%	Comdty. 16.8%	Large Cap 2.1%	DM Equity 17.9%	Asset Alloc. 14.9%	Asset Alloc. 5.2%	Cash 0.0%	Comdty. 11.8%	Small Cap 14.6%	High Yield -4.1%	DM Equity 22.7%	Asset Alloc. 10.6%	Small Cap 14.8%	Fixed Income -13.0%	Asset Alloc. 14.1%	High Yield 9.2%	High Yield -0.6%
High Yield 5.9%	Comdty. 16.1%	Large Cap 15.1%	Cash 0.1%	Small Cap 16.3%	High Yield 7.3%	Small Cap 4.9%	DM Equity -0.4%	EM Equity 11.6%	Asset Alloc. 14.6%	Large Cap -4.4%	Asset Alloc. 19.5%	DM Equity 8.3%	Asset Alloc. 13.5%	Asset Alloc. -13.9%	High Yield 14.0%	EM Equity 8.1%	DM Equity -3.4%
DM Equity 5.7%	Large Cap 15.1%	High Yield 14.8%	Asset Alloc. -0.7%	Large Cap 16.0%	REITs 2.9%	Cash 0.0%	Asset Alloc. -2.0%	REITs 8.6%	High Yield 10.4%	Asset Alloc. -5.8%	EM Equity 18.9%	Fixed Income 7.5%	DM Equity 11.8%	DM Equity -14.0%	REITs 11.4%	Comdty. 5.4%	Asset Alloc. -3.6%
EM Equity 3.4%	Asset Alloc. 10.4%	Asset Alloc. 13.3%	Small Cap -4.2%	Asset Alloc. 12.2%	Cash 0.0%	High Yield 0.0%	High Yield -2.7%	Asset Alloc. 8.3%	REITs 8.7%	Small Cap -11.0%	High Yield 12.6%	High Yield 7.0%	High Yield 1.0%	Large Cap -18.1%	EM Equity 10.3%	Cash 5.3%	REITs -4.1%
Fixed Income 2.4%	High Yield 9.4%	DM Equity 8.2%	DM Equity -11.7%	Fixed Income 4.2%	Fixed Income -2.0%	EM Equity -1.8%	Small Cap -4.4%	Fixed Income 2.6%	Fixed Income 3.5%	Comdty. -11.2%	Fixed Income 8.7%	Cash 0.5%	Cash 0.0%	EM Equity -19.7%	Fixed Income 5.5%	REITs 4.9%	Large Cap -6.9%
Cash 1.2%	Fixed Income 4.7%	Fixed Income 6.5%	Comdty. -13.3%	Cash 0.1%	EM Equity -2.3%	DM Equity -4.5%	EM Equity -14.6%	DM Equity 1.5%	Comdty. 1.7%	DM Equity -13.4%	Comdty. 7.7%	Comdty. -3.1%	Fixed Income -1.5%	Small Cap -20.4%	Cash 5.1%	DM Equity 4.3%	EM Equity -7.0%
Comdty. -1.0%	Cash 0.9%	Cash 0.1%	EM Equity -18.2%	Comdty. -1.1%	Comdty. -9.5%	Comdty. -17.0%	Comdty. -24.7%	Cash 0.3%	Cash 0.8%	EM Equity -14.2%	Cash 2.2%	REITs -5.1%	EM Equity -2.2%	REITs -24.9%	Comdty. -7.9%	Fixed Income 1.3%	Small Cap -13.9%

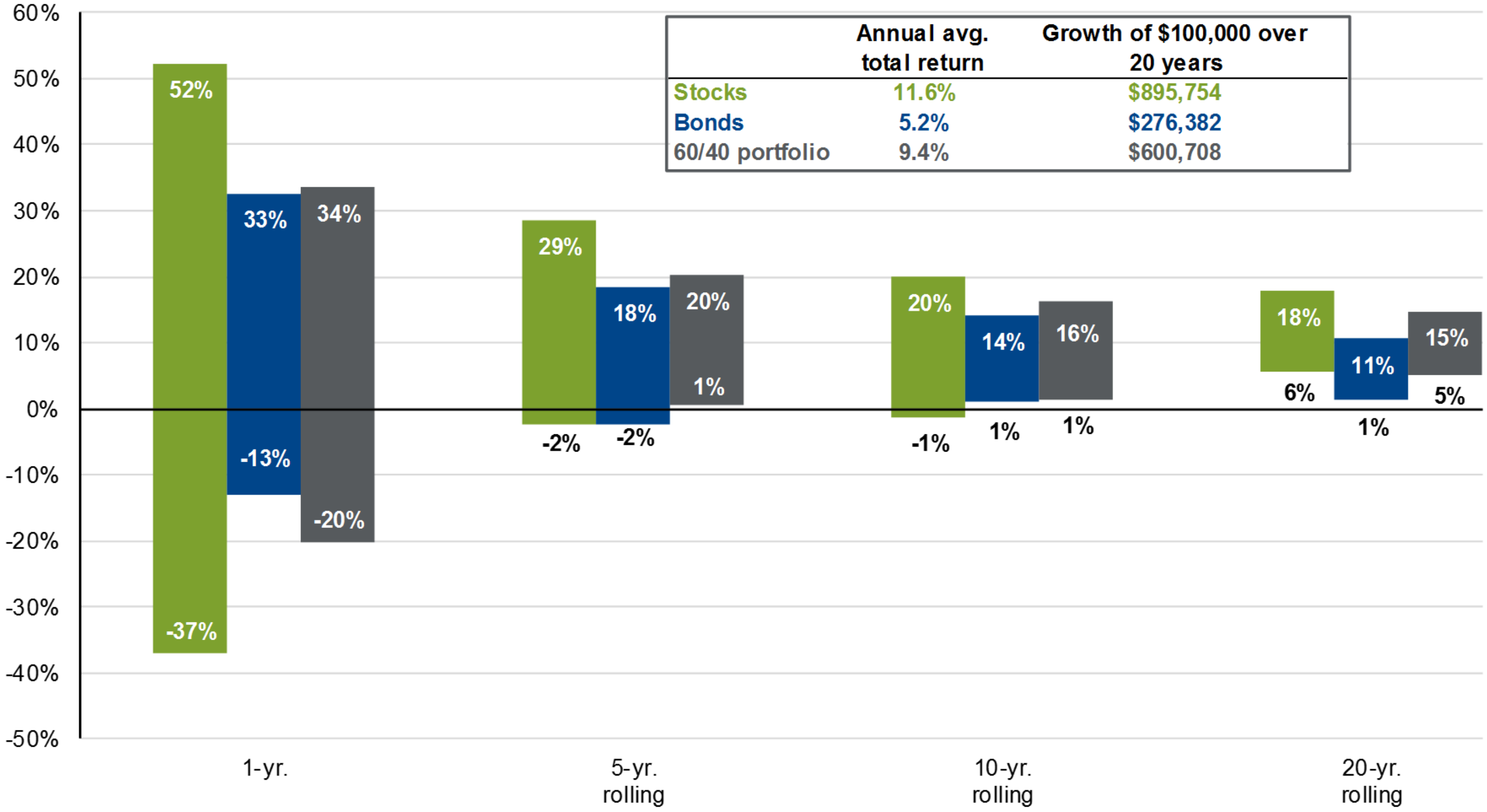
Source: Bloomberg, FactSet, MSCI, NAREIT, Russell, Standard & Poor's, J.P. Morgan Asset Management.
Large cap: S&P 500, Small cap: Russell 2000, EM Equity: MSCI EME, DM Equity: MSCI EAFE, Comdty: Bloomberg Commodity Index, High Yield: Bloomberg Global HY Index, Fixed Income: Bloomberg U.S. Aggregate, REITs: NAREIT Equity REIT Index, Cash: Bloomberg 1-3m Treasury. The "Asset Allocation" portfolio assumes the following weights: 25% in the S&P 500, 10% in the Russell 2000, 15% in the MSCI EAFE, 5% in the MSCI EME, 25% in the Bloomberg U.S. Aggregate, 5% in the Bloomberg 1-3m Treasury, 5% in the Bloomberg Global High Yield Index, 5% in the Bloomberg Commodity Index and 5% in the NAREIT Equity REIT Index. Balanced portfolio assumes annual rebalancing. Annualized (Ann.) return and volatility (Vol.) represents period from 12/31/2009 to 12/31/2024. Please see disclosure page at end for index definitions. All data represents total return for stated period. The "Asset Allocation" portfolio is for illustrative purposes only. Past performance is not indicative of future returns.
Guide to the Markets – U.S. Data are as of April 9, 2025.

J.P.Morgan
ASSET MANAGEMENT

Investing Principles

Time, diversification and the volatility of returns

Range of stock, bond and blended total returns
Annual total returns, 1950–2024



	Annual avg. total return	Growth of $100,000 over 20 years
Stocks	11.6%	$895,754
Bonds	5.2%	$276,382
60/40 portfolio	9.4%	$600,708

Investing Principles

Source: Bloomberg, FactSet, Federal Reserve, Standard & Poor's, Strategas/Ibbotson, J.P. Morgan Asset Management.
Returns shown are based on calendar year returns from 1950 to 2024. Bonds represent Strategas/Ibbotson for periods prior to 1976 and the Bloomberg Aggregate thereafter. Growth of $100,000 is based on annual average total returns from 1950 to 2024.
Guide to the Markets – U.S. Data are as of February 28, 2025.

J.P.Morgan ASSET MANAGEMENT

Thank you

Questions?