

Demystifying Diversification

May 18, 2024

AAll Houston Chapter

Chris Pedersen

Director of Research, The
Merriman Financial Education
Foundation

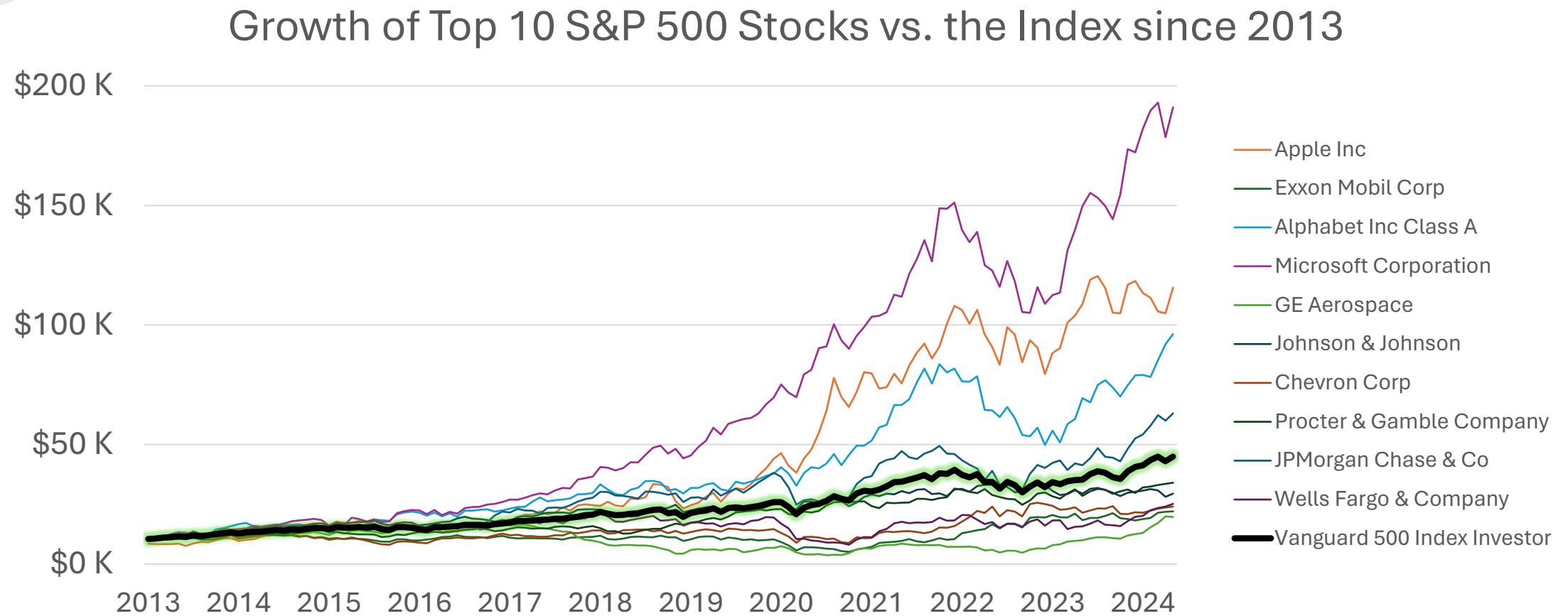


Today's Agenda



- Why Diversification Matters
- Perspective
- Ingredients
- Mixing
- Simplicity vs. Complexity
- Implications for Accumulators & Retirees
- Summary
- Q&A

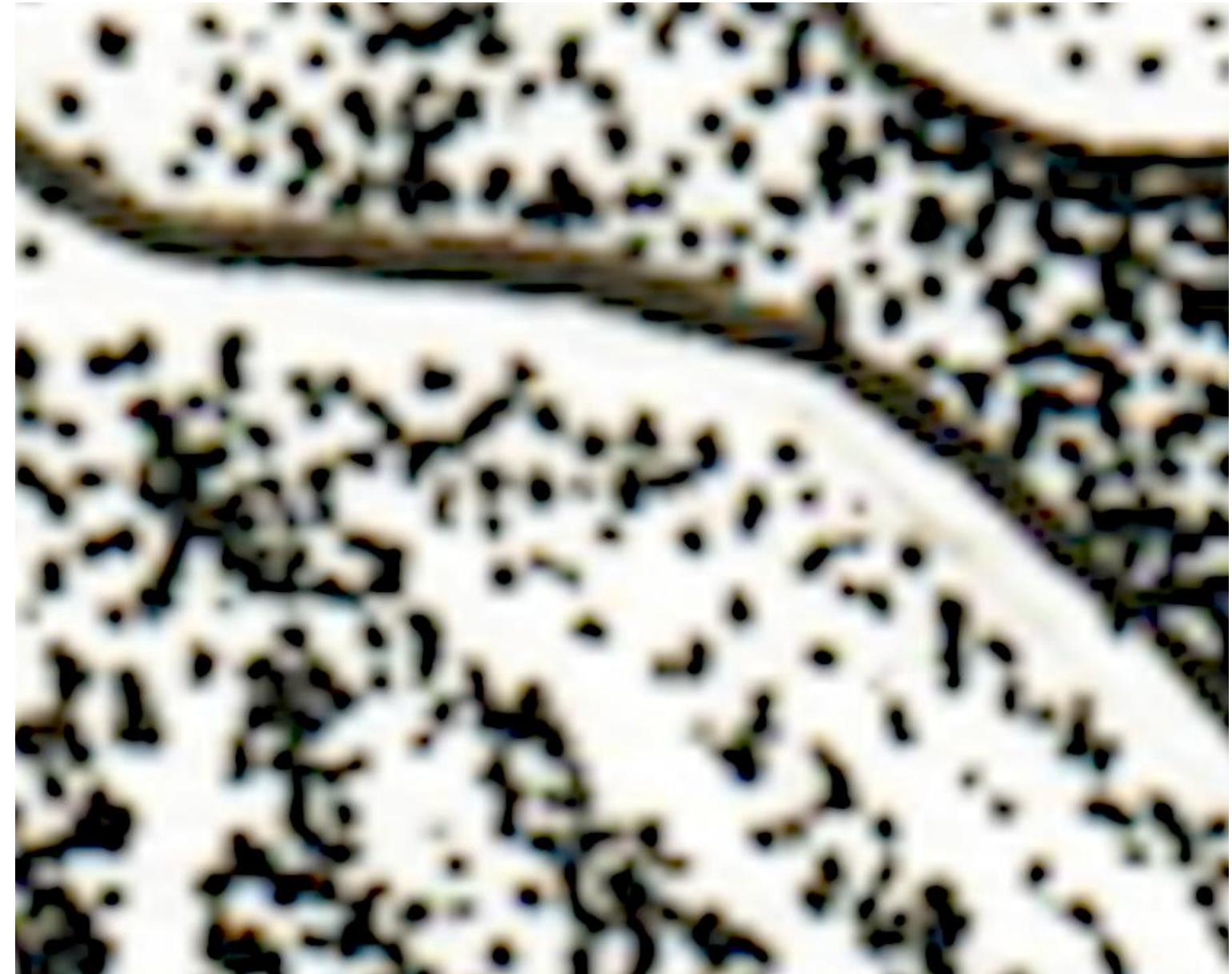
Why Diversification Matters

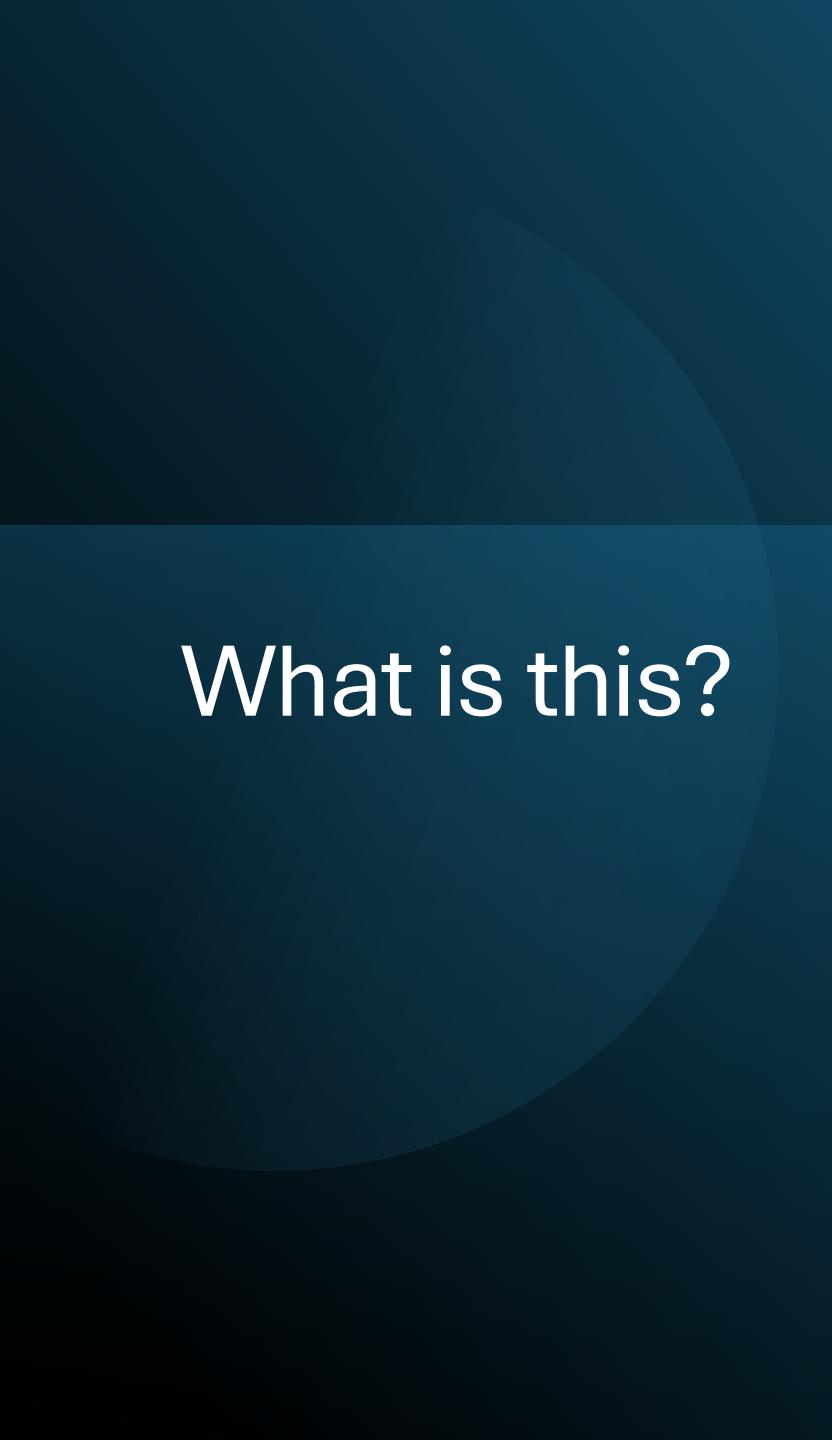


A perspective view of a modern city skyline, featuring several skyscrapers with glass and steel facades. The buildings are arranged in a way that creates a strong sense of depth and perspective, converging towards a bright, cloudy sky in the background. The overall color palette is dominated by shades of blue and grey.

Perspective

What is this?





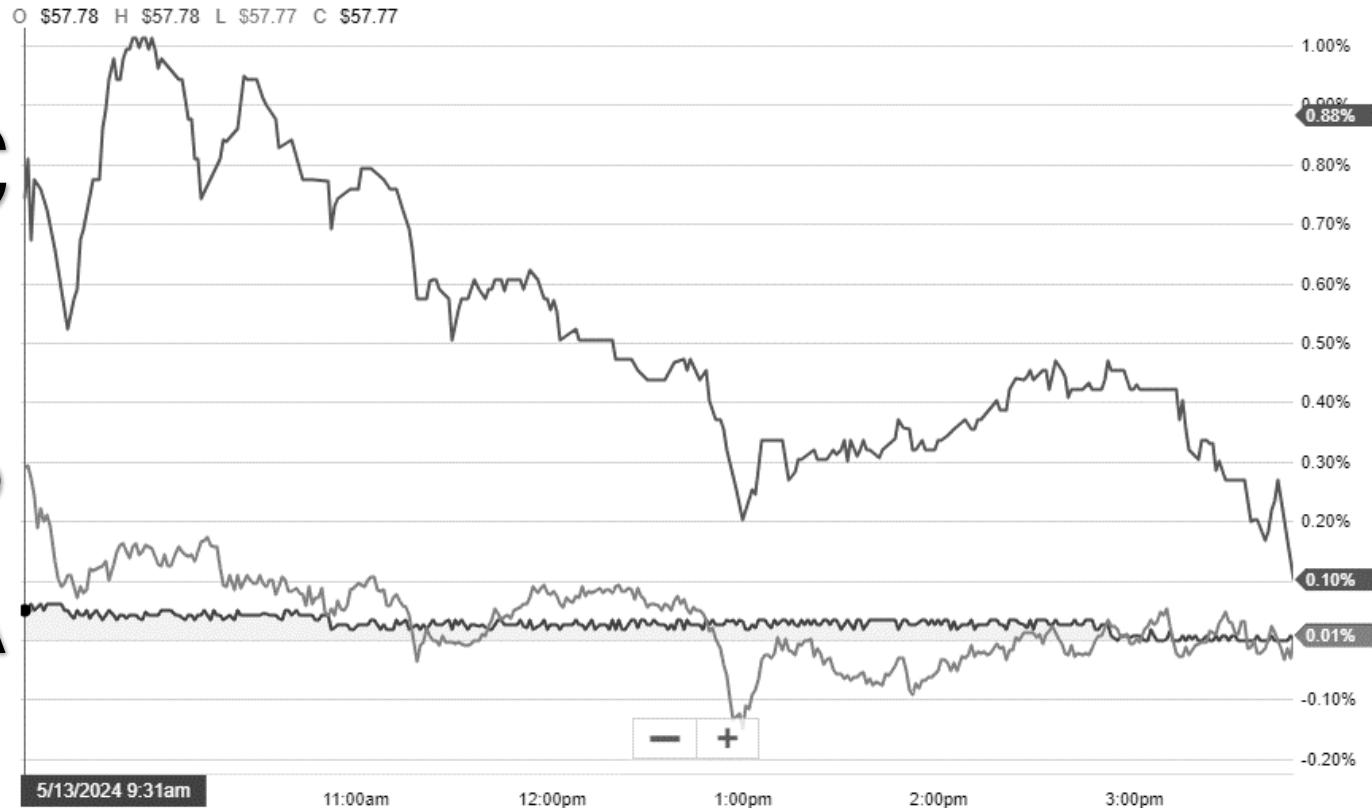
What is this?



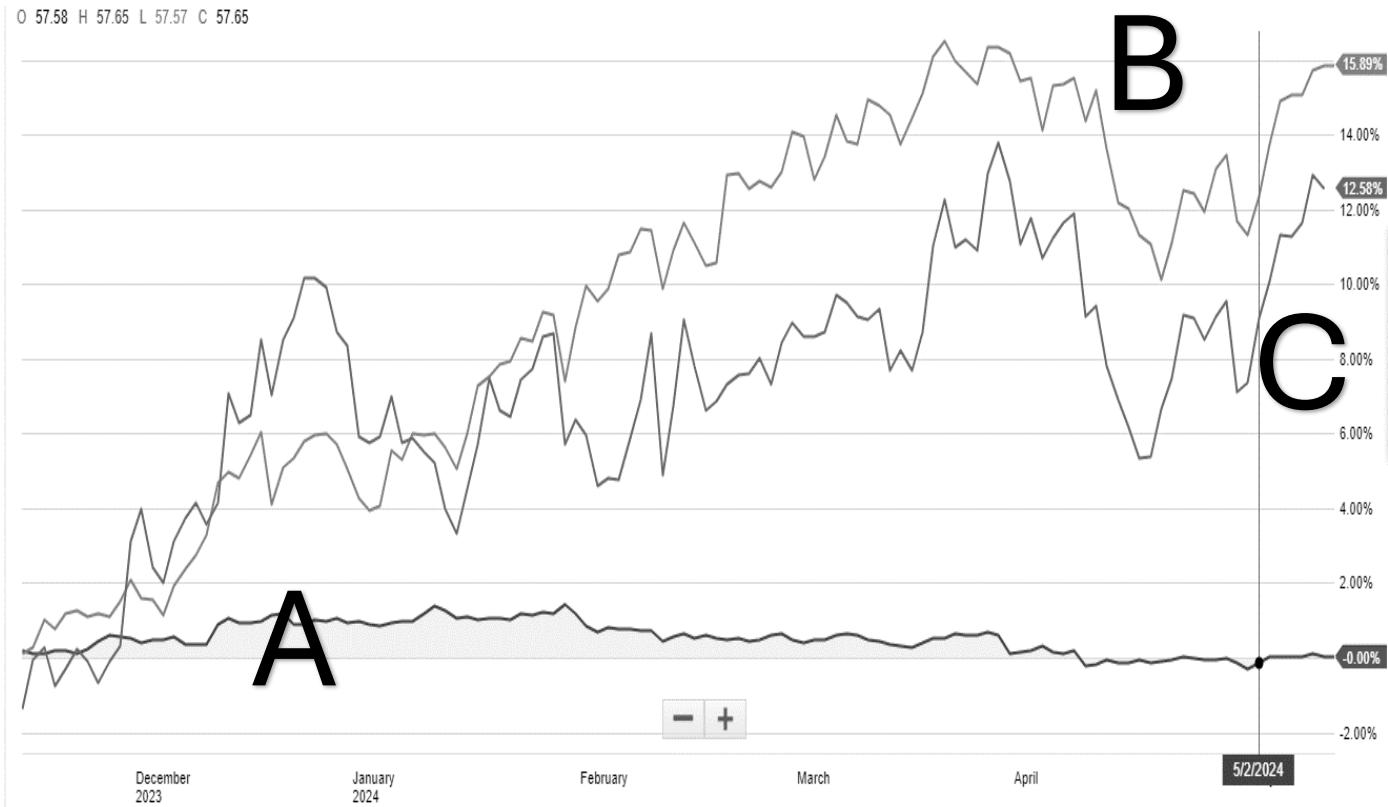
What is this?



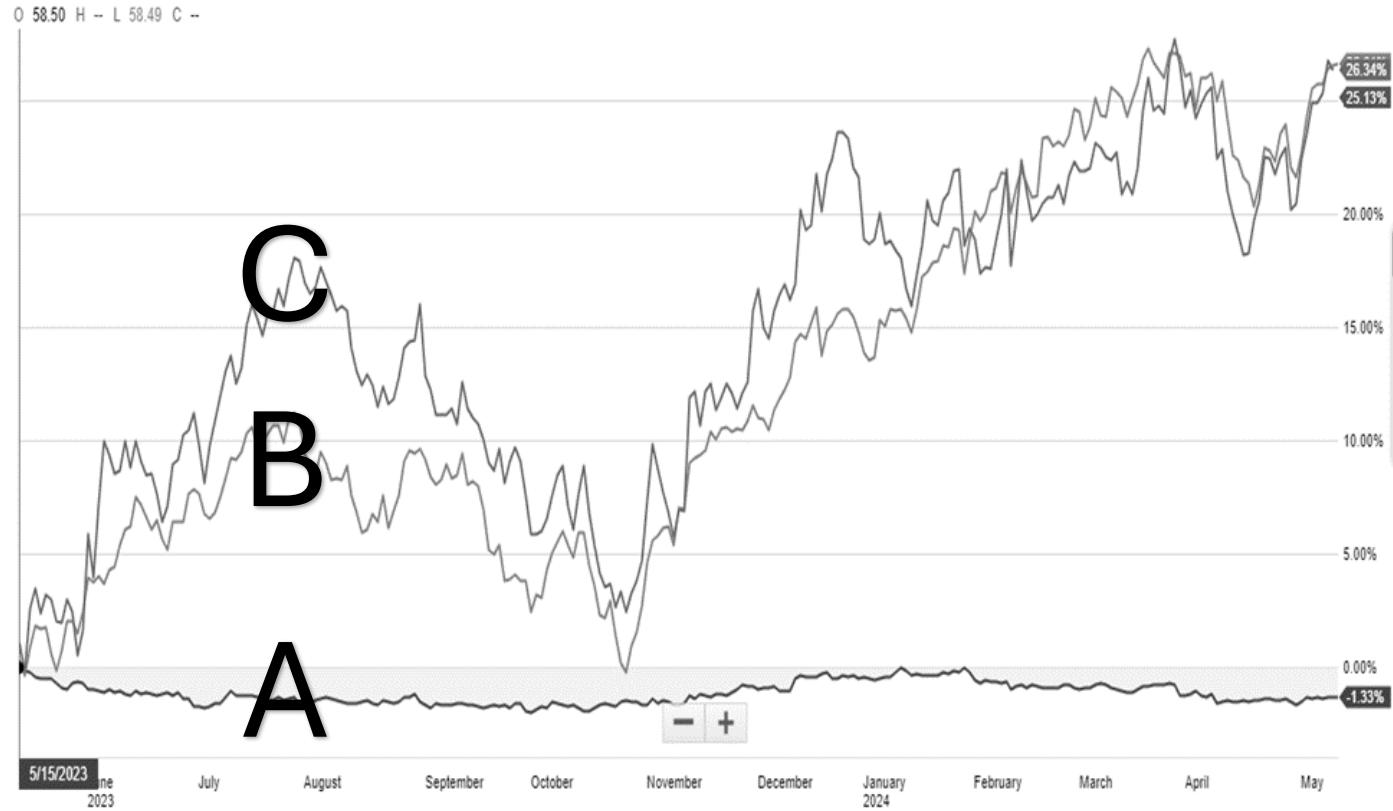
C
B
A



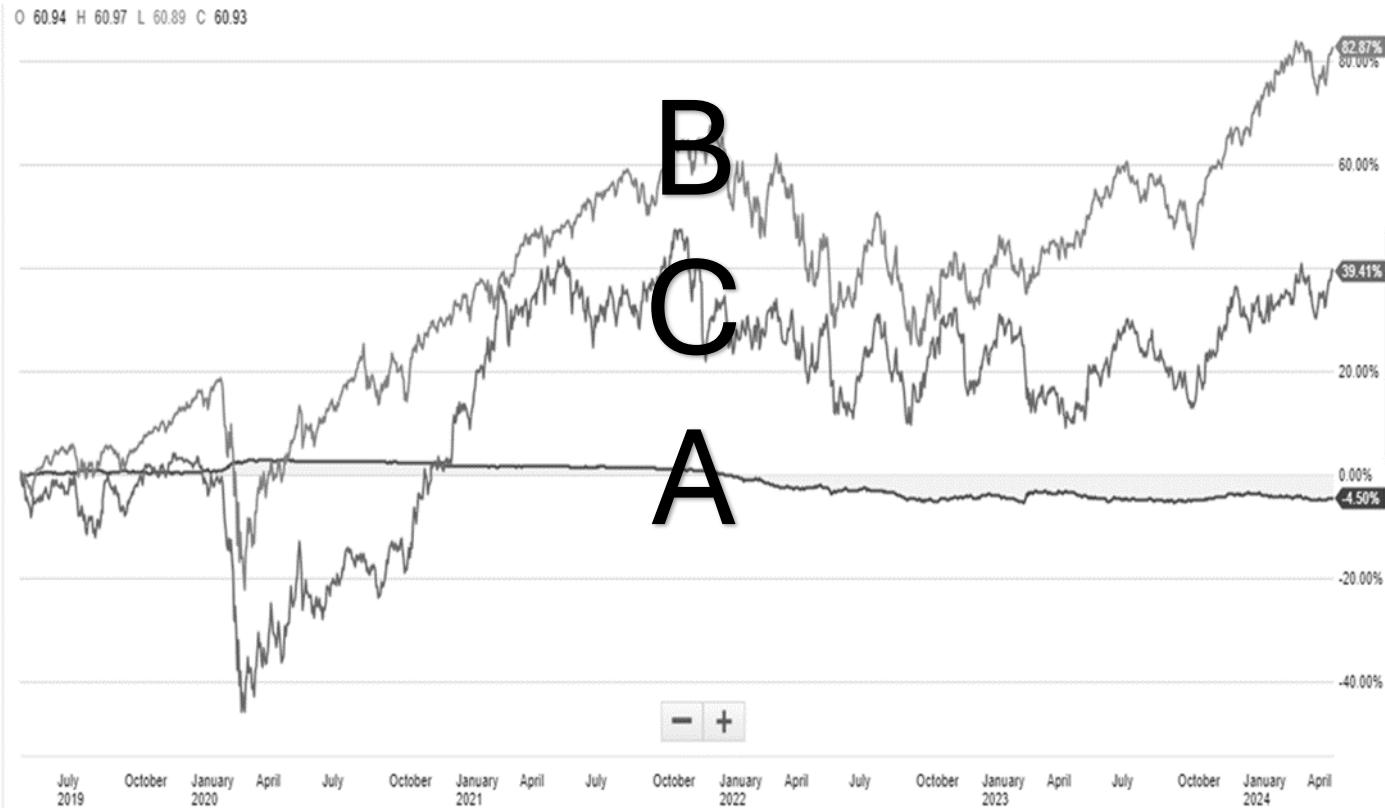
Three
Investments
– One Day



Three Investments – 6 Months



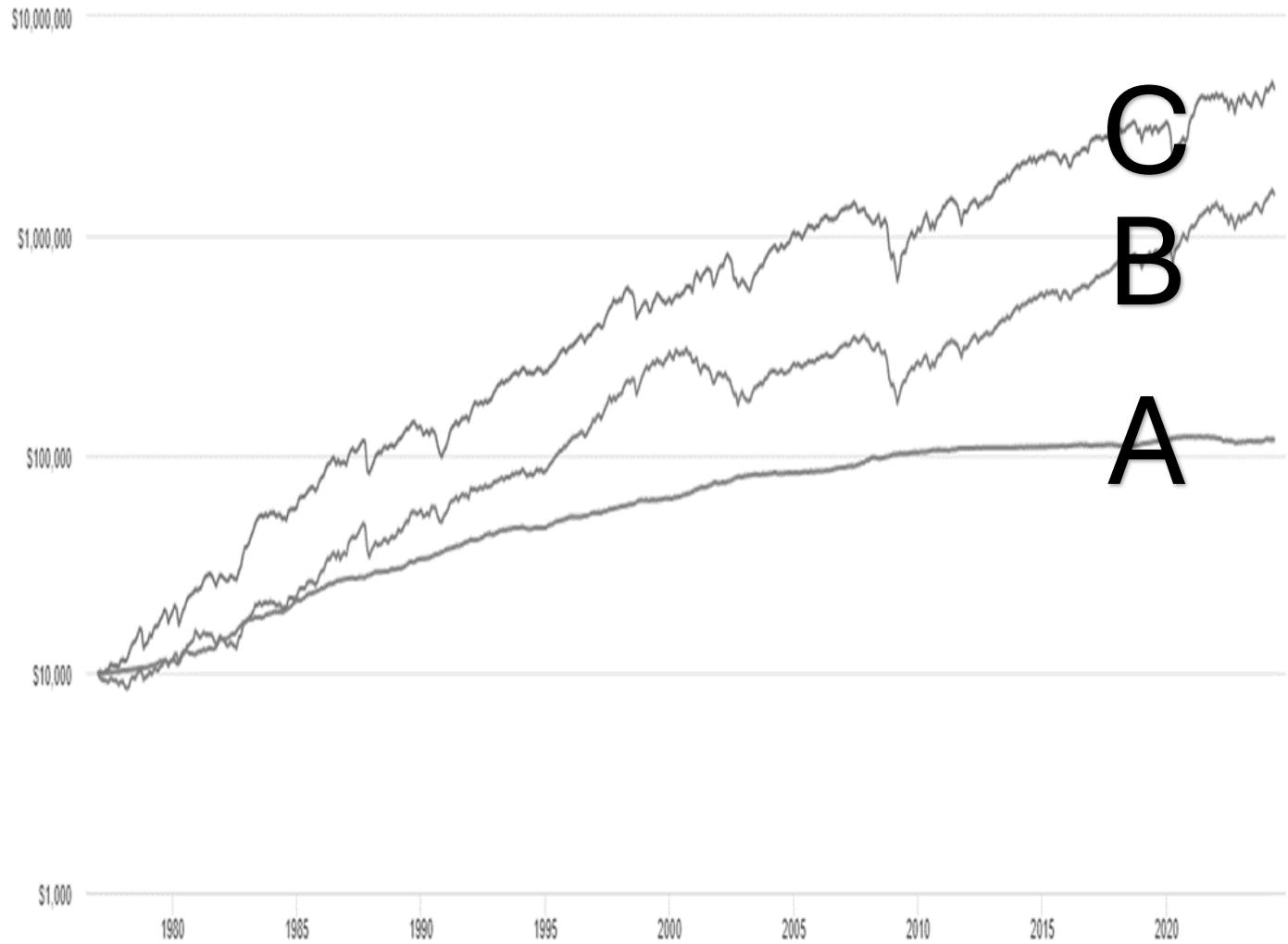
Three
Investments
– 1 Year



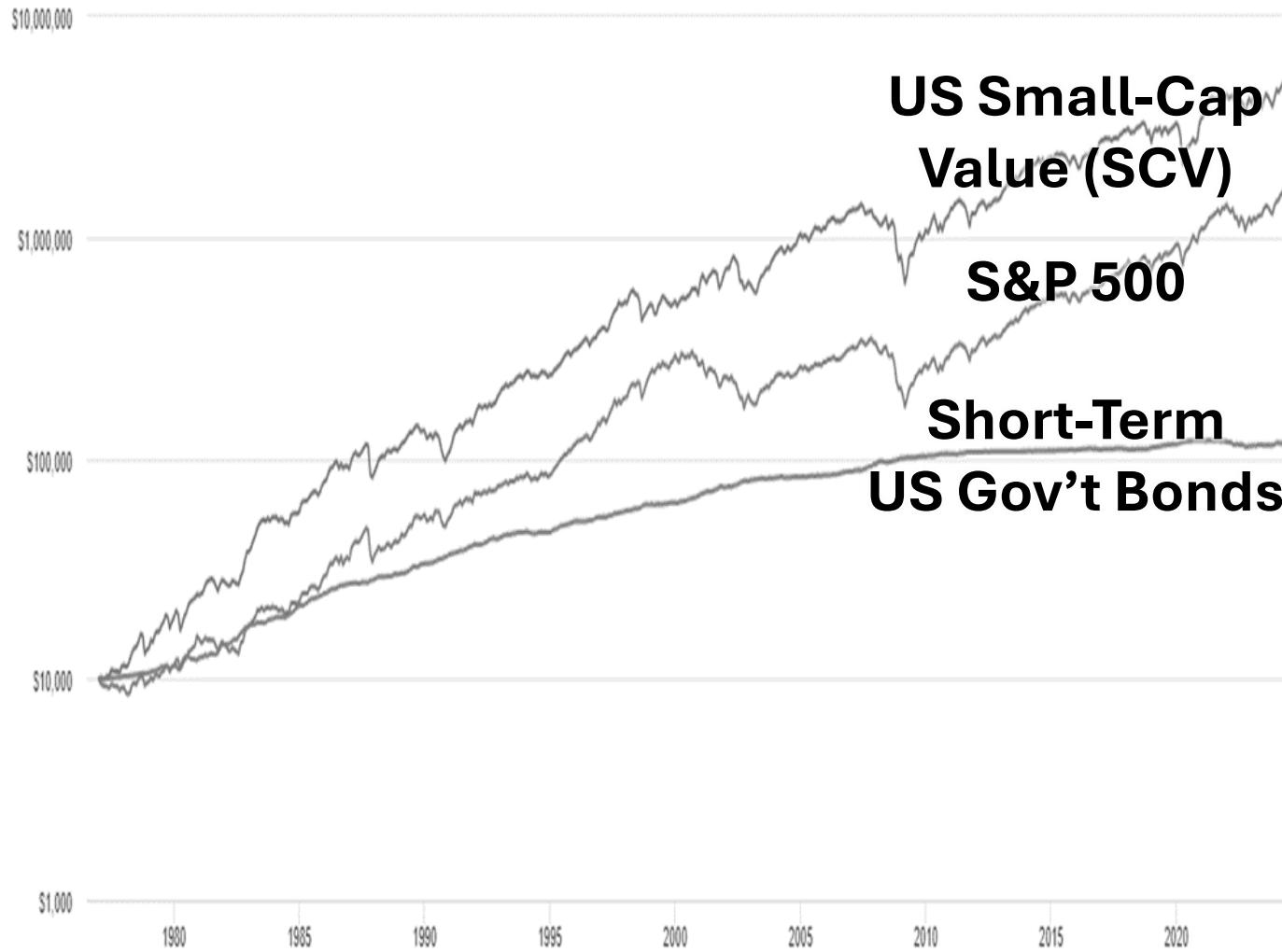
Three
Investments
– 5 Years



Three
Investments
– 10 Years



Three
Investments
– 47+ Years



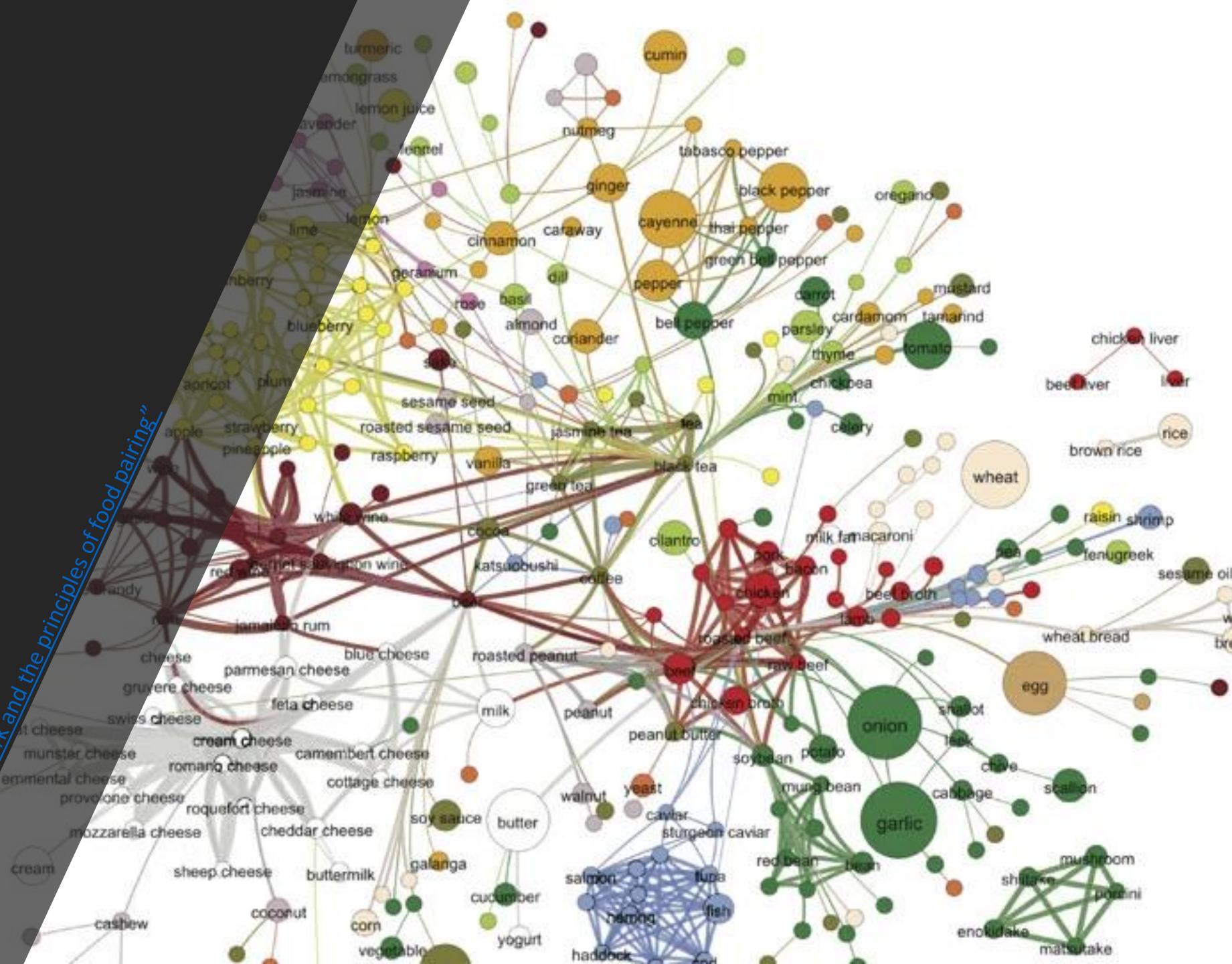
Three
Investments
– 47+ Years

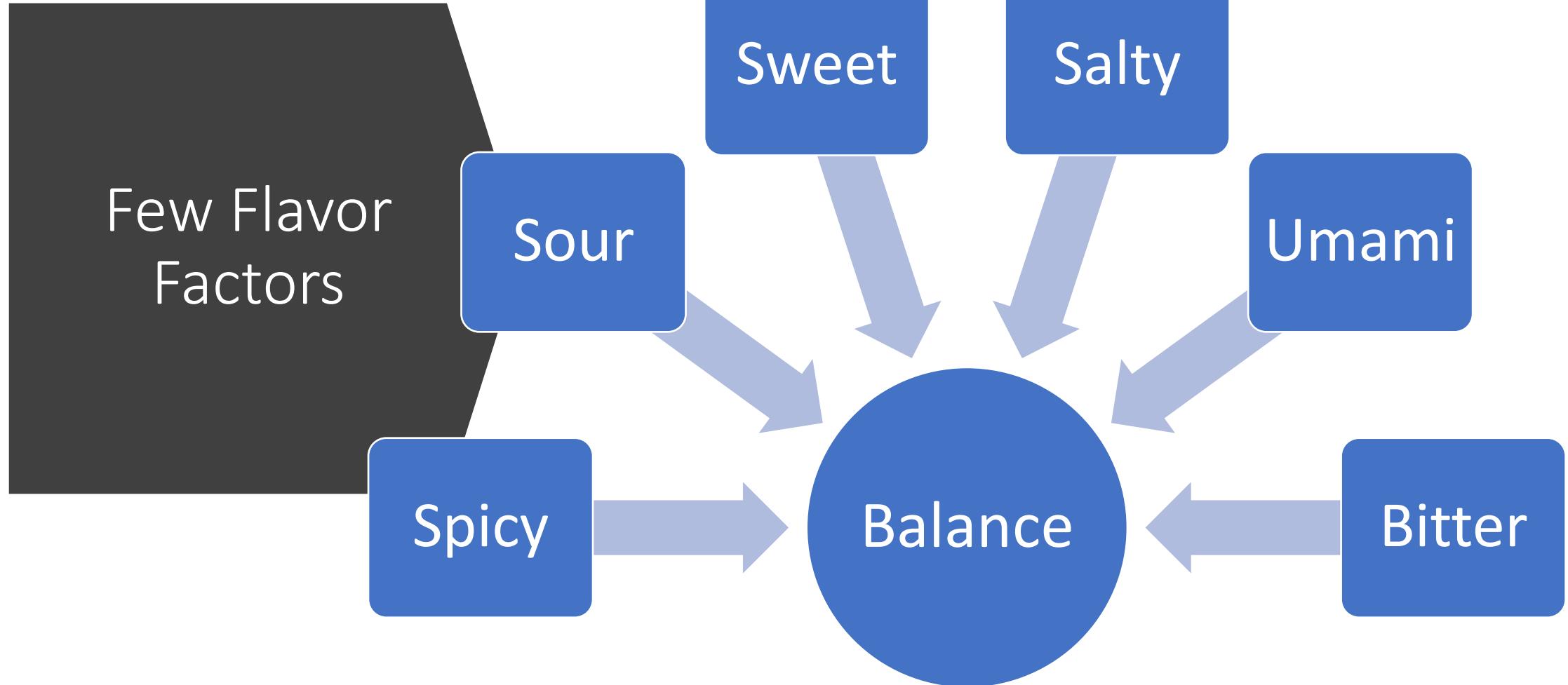


Ingredients

Many Foods

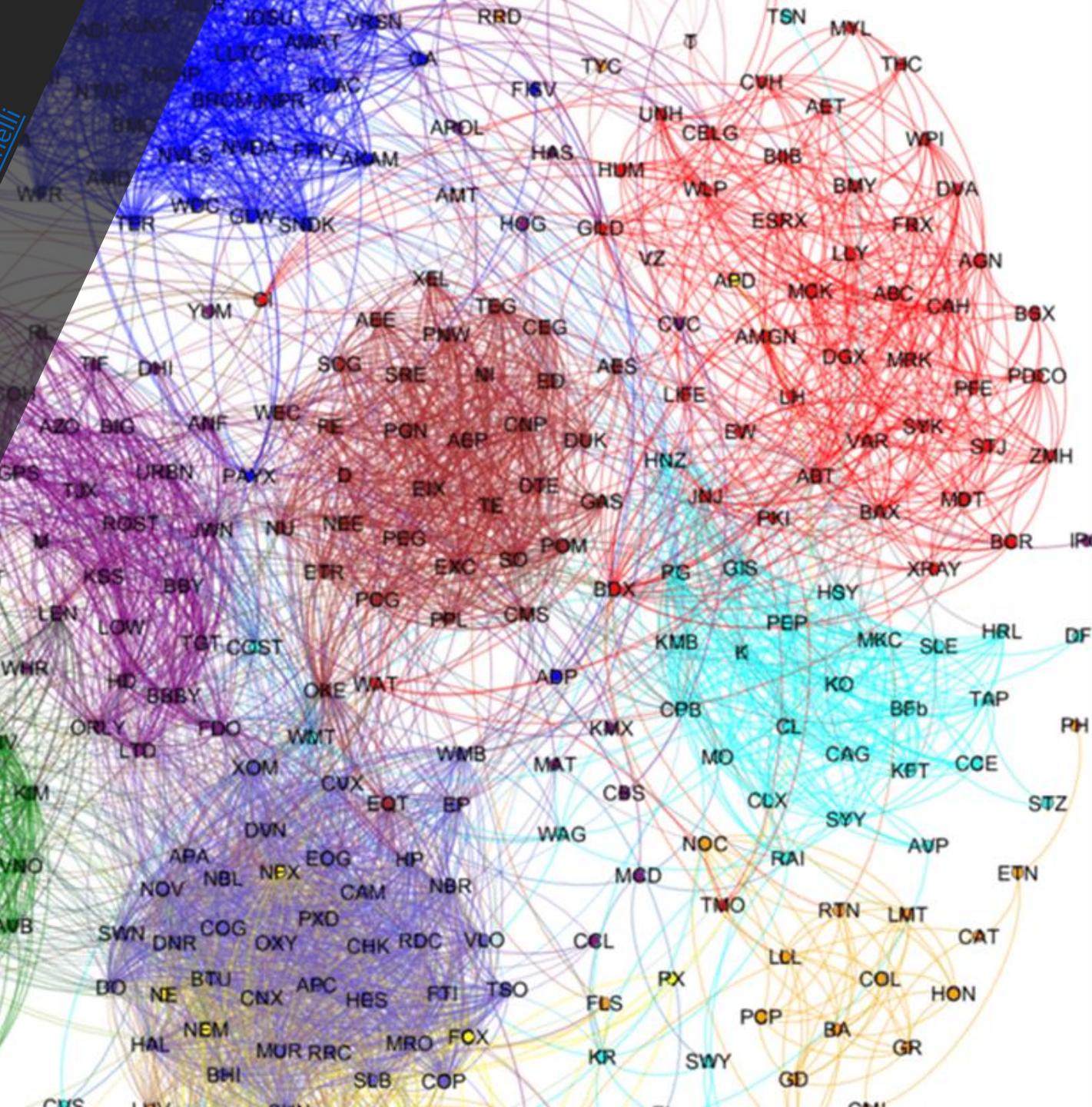
Source: "Flavor network and the principles of food pairing"

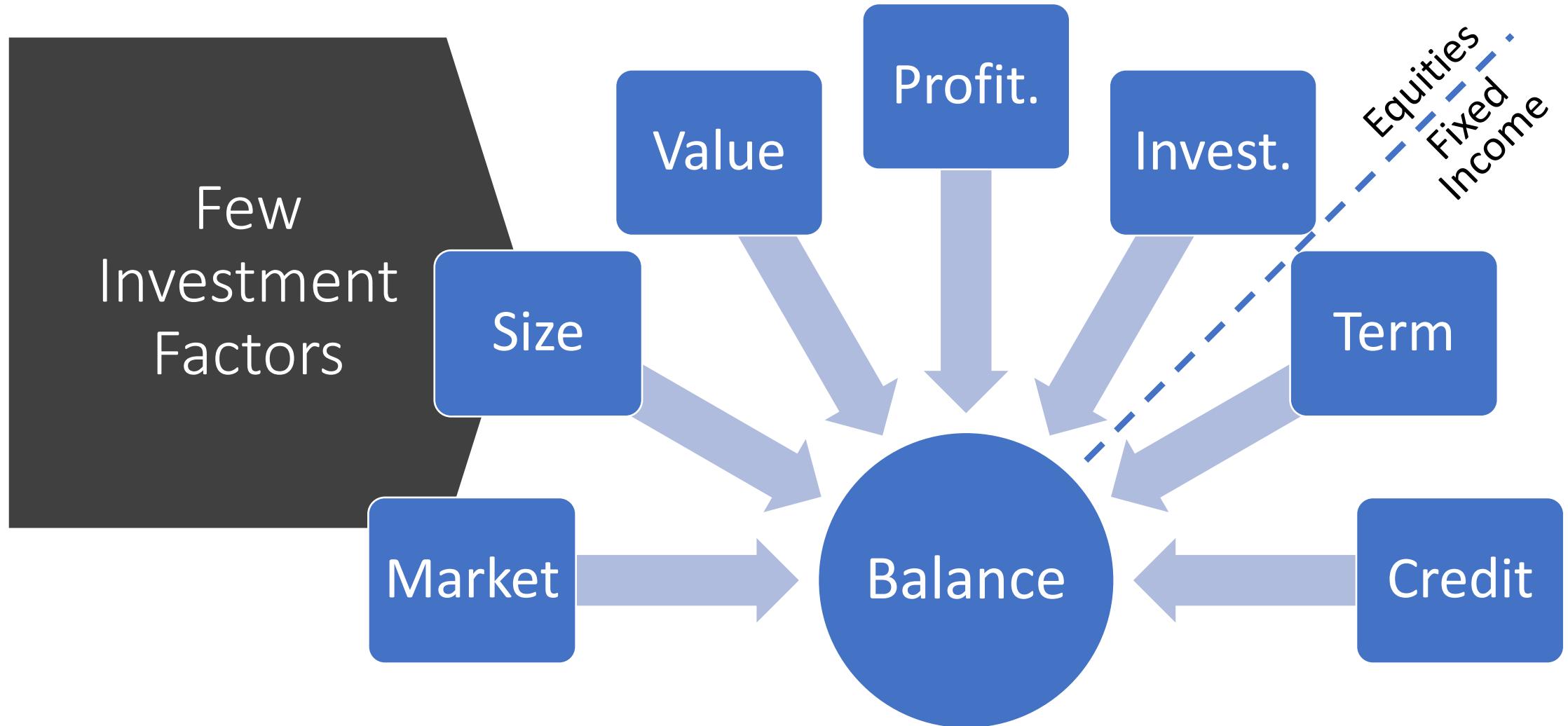




Many Companies & Bonds

Source: "Unbiased community detection for correlation matrices", MacMahon & Garlaschelli





Many Models, Many Premiums

	Fama-French (Jan 1964 – Feb 2024)			AQR (Jan 1964 – Feb 2024)		Alpha Architects (Jan 1992 – Jan 2024)			q-Factors (Jan 1967 – Dec 2022)		
	3-Factor Model	4-Factor Model	5-Factor Model	3-Factor Model	4-to-6- Factor Model	3-Factor Model	4-Factor Model	5-Factor Model	3-Factor Model	4-Factor Model	5-Factor Model
Market	5.8%	5.8%	5.5%	5.5%	5.5%	8.0%	8.0%	8.0%	5.6%	5.6%	5.6%
Size	1.6%	1.6%	2.1%	1.1%	1.1%	3.1%	3.1%	3.1%	2.8%	2.8%	2.8%
Value	2.9%	2.9%	2.9%	2.5%	2.5%	2.3%	2.3%	2.3%			
Momentum		6.4%			6.9%		2.0%	2.0%			
Profitability			3.1%								
Investment			3.0%						4.5%	4.5%	4.5%
Quality					4.3%			0.9%			
Bet-Against-Beta					9.0%						
Return on Equity									6.2%	6.2%	
Expected Growth											9.4%

Source: Portfolio Visualizer Factor Statistics Page – US Risk premia shown rounded to nearest 0.1%.

Fama, French, Cross-Section of Returns

	1926-2023 Returns by Size and Value (B/M)				
	Large	Med-Lg	Medium	Med-Sm	Small
	10.68%	8.76%	10.28%	9.52%	9.93%
Value	11.95%	12.47%	11.58%	10.88%	10.09%
Med-Val	13.00%	13.26%	12.39%	12.13%	8.86%
Medium	14.68%	13.19%	12.41%	11.80%	7.33%
Med-Gwth	15.80%	13.97%	11.26%	6.46%	2.37%
Growth					

Fama, French, Cross-Section of Returns

	2000-2023 Returns by Size and Value (B/M)				
	Large	3.68%	8.46%	7.88%	7.63%
	Med-Lg	9.03%	9.53%	10.58%	8.22%
	Medium	10.31%	10.14%	10.93%	5.10%
	Med-Sm	9.33%	10.23%	10.30%	5.57%
	Small	10.88%	8.05%	7.92%	-0.21%
	Value	Med-Val	Medium	Med-Gwth	Growth



To Get The Premiums & Diversification Benefits, You Have to Tilt

Where do we find these ingredients?

Merriman Best-In-Class ETF Recommendations

	Best-in-Class (New in 2023)	Alternative Recommendations
US Large Cap Blend	Avantis U.S. Equity (AVUS)	DFA US Equity ETF (DFUS), Vanguard S&P 500 (VOO), Vanguard Total US Market (VTI), iShares Core S&P 500 (IVV), SPDR Large Cap (SPLG), Schwab Large-Cap (SCHX)
US Large Cap Value	Invesco S&P 500 Pure Value (RPV)	Avantis US Large Cap Value (AVLV), Vanguard Russell 1000 Value Index (VONV), iShares Core US Value (IUSV), Schwab S&P 500 Value (SPYV), U.S. Large-Cap Value (SCHV)
US Small Cap Blend	iShares Core S&P Small-Cap (IJR)	Avantis US Small Cap Equity (AVSC), DFA US Small Cap ETF (DFAS), Vanguard S&P Small-Cap 600 Index (VIOO), Russell Micro-Cap (IWC), Schwab U.S. Small-Cap (SCHA), SPDR Small Cap (SPSM)
US Small Cap Value	Avantis U.S. Small Cap Value (AVUV)	DFA US Small Cap Value ETF (DFSV), Vanguard S&P Small-Cap 600 Value (VIOV), SPDR Small Cap Value (SLYV), iShares S&P; SmCp 600 Value (IJS), Invesco S&P SmallCap 600 Pure Value ETF (RZV)
US REIT	Vanguard Real Estate Index (VNU)	Fidelity MSCI Real Estate (FREL), iShares U.S. REIT (USRT), Schwab U.S. REIT (SCHH)
Int'l Large Cap Blend	Avantis International Equity (AVDE)	Vanguard FTSE Developed Markets (VEA), iShares Core MSCI EAFE (IEFA), SPDR World Ex-US (SPDW), Schwab Intl Equity (SCHF)
Int'l Large Cap Value	DFA International Value (DFIV)	Vanguard International High Dividend (VYMI), Avantis International Large Cap Val ETF (AVIV), iShares MSCI EAFE Value (EFV), iShares MSCI EAFE Value, Fidelity International Value Factor ETF (FIVA), SPDR S&P Intl Dividend (DWX)
Int'l Small Cap Blend	Schwab Fundamental International Small Company Index (FNDC)	DFA International Small Cap ETF (DFIS), Vanguard FTSE All-World ex-US Small-Cap Index (VSS), iShares MSCI EAFE SmCap (SCZ), SPDR S&P Intl. Small Cap (GWX), Schwab Intl Sm-Cp Equity (SCHC)
Int'l Small Cap Value	Avantis International Small Cap Value (AVDV)	DFA International Small Cap Value I (DISV), WisdomTree Intl. S. Cap Div (DLS)
Emerging Markets	Avantis Emerging Markets Equity (AVEM)	DFA Emerging Core Equity Market ETF (DFAE), Vanguard FTSE Emerging Markets (VVO), iShares Core MSCI EmMkts. (IEMG), SPDR Emerging Markets (SPEM), Schwab Emerging Mkt Eq (SCHE)
EM Large Cap Value	Avantis Emerging Markets Value (AVES)	Dimensional Emerging Markets Value ETF (DFEV)
EM Small Cap Blend	iShares MSCI Em. Mkts. Sm.-Cap (EEMS)	SPDR Emerging Mkts. S. Cap (EWX), WisdomTree Em. Markets SmCp Div ETF (DGS)
Int'l REITs	---	Vanguard Global ex-US Real Estate (VNQI), iShares FTSE Real Estate ex-US (IFGL),
Short-Term Bonds	Vanguard Short-Term Gov't Bond (VGSH)	iShares Barclays ST Treas. (SHY), SPDR ST Treas. (SPTS), Schwab ST U.S. Treas. (SCHO)
Int.-Term Bonds	SPDR Inter. Term Treasury (SPTI)	iShares Barclays 7-10 Yr Treasury (IEF), Vanguard Intermediate-Term Government Bond (VGIT), Schwab I-T U.S. Treasury (SCHR)
Infl.-Prot. Bonds	Vanguard Short-Term Infl. Prot. Sec. (VTIP)	iShares Barclays 0-5 TIPS (STIP), Schwab U.S. TIPS (SCHP)

Mixing



Ultimate Buy & Hold Diversified Portfolio

Table A1 - Ultimate Buy & Hold Equity Portfolio (50% US/50% Int'l)

World-Wide Equity Portfolio Build-Up							
	S&P 500	+US LCV	+US SCB	+US SCV	+US REITs	+Int'l	+ EM
1970 - 2022 (53 years) (with ANNUAL rebalancing)	Portfolio 1 S&P 500	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5	Portfolio 6	Portfolio 7 WW UBH
Initial \$100,000 Grew to:	\$18,906,960	\$20,783,828	\$22,326,248	\$27,005,724	\$27,628,666	\$35,665,979	\$41,821,137
Annualized Compound Return	10.4%	10.6%	10.7%	11.1%	11.2%	11.7%	12.1%
Annualized Standard Deviation	17.2%	17.1%	17.2%	17.3%	17.1%	17.9%	18.5%
Difference from Portfolio 1	\$0	\$1,876,868	\$3,419,289	\$8,098,764	\$8,721,706	\$16,759,020	\$22,914,178

© 2023 The Merriman Financial Education Foundation

Note: Index returns reduced by the equivalent of a representative fund's expense ratio.

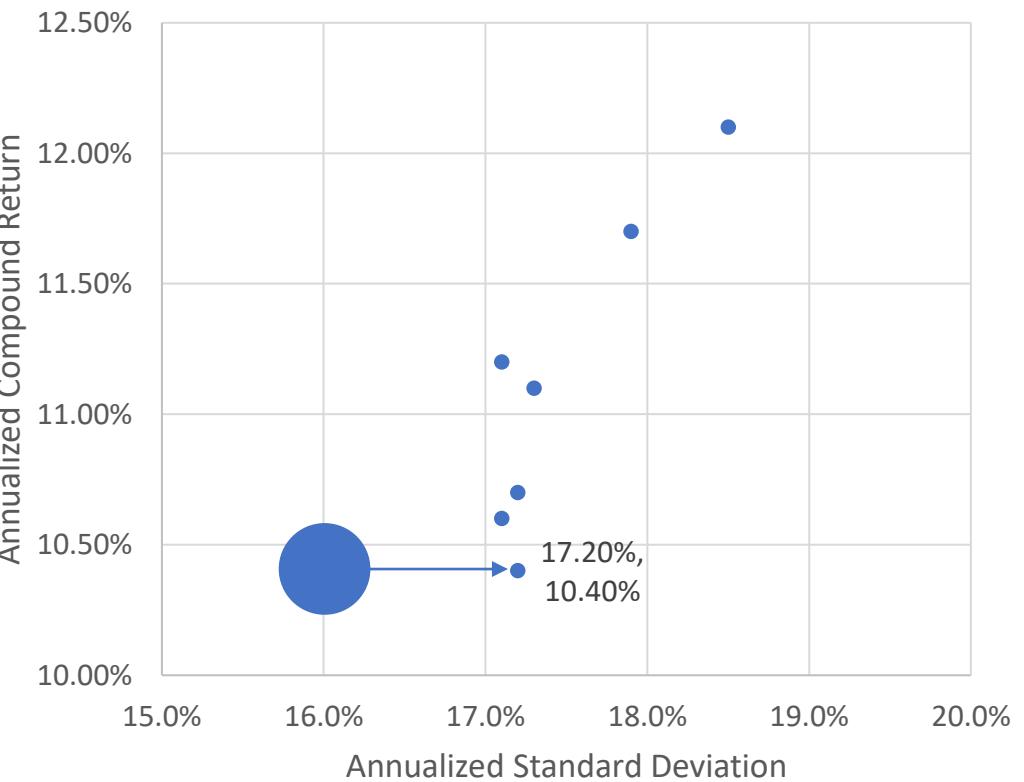
World-Wide Equity Portfolio Build-Up							
	S&P 500	+US LCV	+US SCB	+US SCV	+US REITs	+Int'l	+ EM
1970 - 2022 (53 years) (with MONTHLY rebalancing)	Portfolio 1 S&P 500	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5	Portfolio 6	Portfolio 7 WW UBH
Initial \$100,000 Grew to:	\$18,906,960	\$20,694,765	\$22,176,579	\$26,539,200	\$27,169,780	\$33,119,454	\$37,390,920
Annualized Compound Return	10.4%	10.6%	10.7%	11.1%	11.2%	11.6%	11.8%
"Annualized" Monthly Standard Dev.	17.2%	17.2%	17.5%	17.8%	17.6%	17.1%	17.5%
Difference from Portfolio 1	\$0	\$1,787,805	\$3,269,619	\$7,632,240	\$8,262,820	\$14,212,495	\$18,483,960

© 2023 The Merriman Financial Education Foundation

Note: Index returns reduced by the equivalent of a representative fund's expense ratio.

Ultimate Buy & Hold Equity Portfolio Asset Allocation (50% US/50% Int'l)										
Portfolio	S&P 500	US LCV	US SCB	US SCV	REIT	Intl LCB	Intl LCV	Intl SCB	Intl SCV	Em Mrkt
#1	100%									
#2	90%	10%								
#3	80%	10%	10%							
#4	70%	10%	10%	10%						
#5	60%	10%	10%	10%	10%					
#6	20%	10%	10%	10%	10%	10%	10%	10%	10%	
#7 / UB&H	10%	10%	10%	10%	10%	10%	10%	10%	10%	

Return versus Risk



Ultimate Buy & Hold Diversified Portfolio

Table A1 - Ultimate Buy & Hold Equity Portfolio (50% US/50% Int'l)

World-Wide Equity Portfolio Build-Up							
	S&P 500	+US LCV	+US SCB	+US SCV	+US REITs	+Int'l	+ EM
1970 - 2022 (53 years) (with ANNUAL rebalancing)	Portfolio 1 S&P 500	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5	Portfolio 6	Portfolio 7 WW UBH
Initial \$100,000 Grew to:	\$18,906,960	\$20,783,828	\$22,326,248	\$27,005,724	\$27,628,666	\$35,665,979	\$41,821,137
Annualized Compound Return	10.4%	10.6%	10.7%	11.1%	11.2%	11.7%	12.1%
Annualized Standard Deviation	17.2%	17.1%	17.2%	17.3%	17.1%	17.9%	18.5%
Difference from Portfolio 1	\$0	\$1,876,868	\$3,419,289	\$8,098,764	\$8,721,706	\$16,759,020	\$22,914,178

© 2023 The Merriman Financial Education Foundation

Note: Index returns reduced by the equivalent of a representative fund's expense ratio.

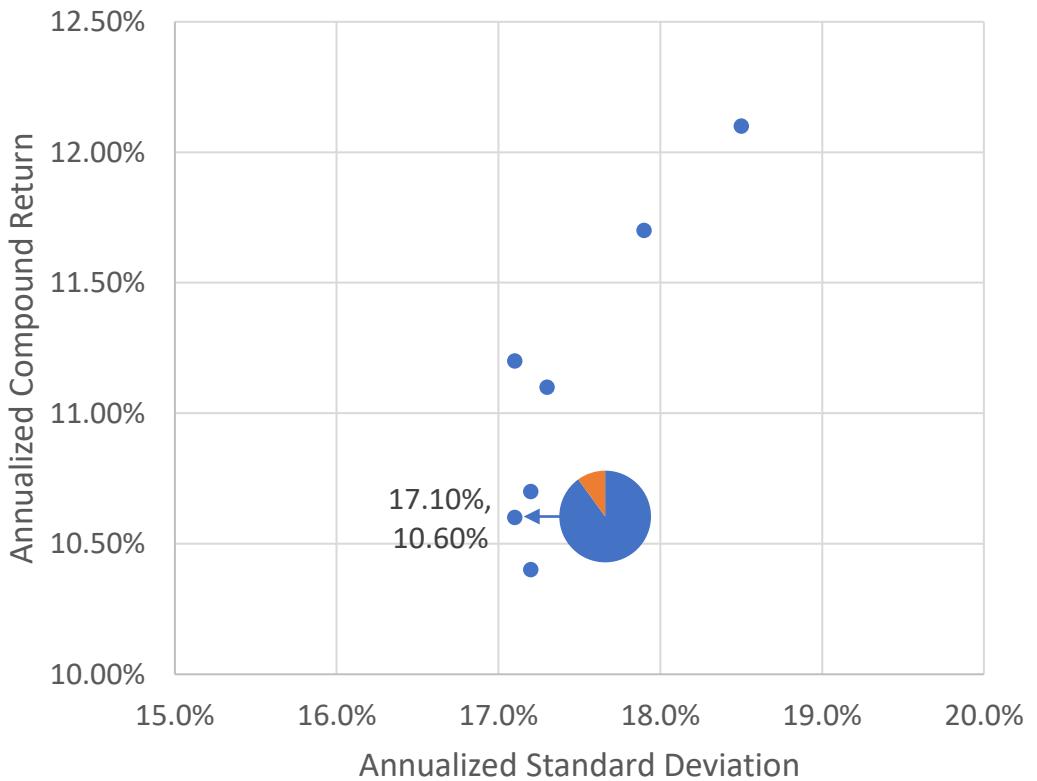
World-Wide Equity Portfolio Build-Up							
	S&P 500	+US LCV	+US SCB	+US SCV	+US REITs	+Int'l	+ EM
1970 - 2022 (53 years) (with MONTHLY rebalancing)	Portfolio 1 S&P 500	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5	Portfolio 6	Portfolio 7 WW UBH
Initial \$100,000 Grew to:	\$18,906,960	\$20,694,765	\$22,176,579	\$26,539,200	\$27,169,780	\$33,119,454	\$37,390,920
Annualized Compound Return	10.4%	10.6%	10.7%	11.1%	11.2%	11.6%	11.8%
"Annualized" Monthly Standard Dev.	17.2%	17.2%	17.5%	17.8%	17.6%	17.1%	17.5%
Difference from Portfolio 1	\$0	\$1,787,805	\$3,269,619	\$7,632,240	\$8,262,820	\$14,212,495	\$18,483,960

© 2023 The Merriman Financial Education Foundation

Note: Index returns reduced by the equivalent of a representative fund's expense ratio.

Ultimate Buy & Hold Equity Portfolio Asset Allocation (50% US/50% Int'l)										
Portfolio	S&P 500	US LCV	US SCB	US SCV	REIT	Intl LCB	Intl LCV	Intl SCB	Intl SCV	Em Mrkt
#1	100%									
#2	90%	10%								
#3	80%	10%	10%							
#4	70%	10%	10%	10%						
#5	60%	10%	10%	10%	10%					
#6	20%	10%	10%	10%	10%	10%	10%	10%	10%	
#7 / UB&H	10%	10%	10%	10%	10%	10%	10%	10%	10%	

Return versus Risk



Ultimate Buy & Hold Diversified Portfolio

Table A1 - Ultimate Buy & Hold Equity Portfolio (50% US/50% Int'l)

World-Wide Equity Portfolio Build-Up							
	S&P 500	+US LCV	+US SCB	+US SCV	+US REITs	+Int'l	+ EM
1970 - 2022 (53 years) (with ANNUAL rebalancing)	Portfolio 1 S&P 500	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5	Portfolio 6	Portfolio 7 WW UBH
Initial \$100,000 Grew to:	\$18,906,960	\$20,783,828	\$22,326,248	\$27,005,724	\$27,628,666	\$35,665,979	\$41,821,137
Annualized Compound Return	10.4%	10.6%	10.7%	11.1%	11.2%	11.7%	12.1%
Annualized Standard Deviation	17.2%	17.1%	17.2%	17.3%	17.1%	17.9%	18.5%
Difference from Portfolio 1	\$0	\$1,876,868	\$3,419,289	\$8,098,764	\$8,721,706	\$16,759,020	\$22,914,178

© 2023 The Merriman Financial Education Foundation

Note: Index returns reduced by the equivalent of a representative fund's expense ratio.

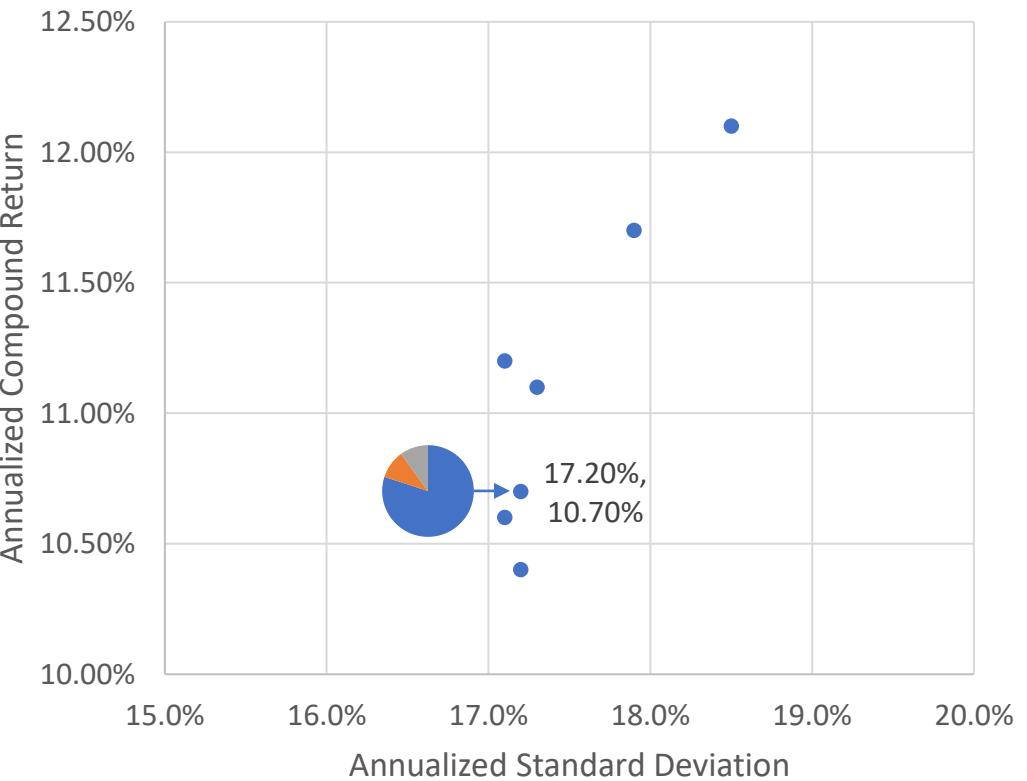
World-Wide Equity Portfolio Build-Up							
	S&P 500	+US LCV	+US SCB	+US SCV	+US REITs	+Int'l	+ EM
1970 - 2022 (53 years) (with MONTHLY rebalancing)	Portfolio 1 S&P 500	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5	Portfolio 6	Portfolio 7 WW UBH
Initial \$100,000 Grew to:	\$18,906,960	\$20,694,765	\$22,176,579	\$26,539,200	\$27,169,780	\$33,119,454	\$37,390,920
Annualized Compound Return	10.4%	10.6%	10.7%	11.1%	11.2%	11.6%	11.8%
"Annualized" Monthly Standard Dev.	17.2%	17.2%	17.5%	17.8%	17.6%	17.1%	17.5%
Difference from Portfolio 1	\$0	\$1,787,805	\$3,269,619	\$7,632,240	\$8,262,820	\$14,212,495	\$18,483,960

© 2023 The Merriman Financial Education Foundation

Note: Index returns reduced by the equivalent of a representative fund's expense ratio.

Ultimate Buy & Hold Equity Portfolio Asset Allocation (50% US/50% Int'l)										
Portfolio	S&P 500	US LCV	US SCB	US SCV	REIT	Intl LCB	Intl LCV	Intl SCB	Intl SCV	Em Mrkt
#1	100%									
#2	90%	10%								
#3	80%	10%	10%							
#4	70%	10%	10%	10%						
#5	60%	10%	10%	10%	10%					
#6	20%	10%	10%	10%	10%	10%	10%	10%	10%	
#7 / UB&H	10%	10%	10%	10%	10%	10%	10%	10%	10%	

Return versus Risk



Ultimate Buy & Hold Diversified Portfolio

Table A1 - Ultimate Buy & Hold Equity Portfolio (50% US/50% Int'l)

World-Wide Equity Portfolio Build-Up							
	S&P 500	+US LCV	+US SCB	+US SCV	+US REITs	+Int'l	+ EM
1970 - 2022 (53 years) (with ANNUAL rebalancing)	Portfolio 1 S&P 500	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5	Portfolio 6	Portfolio 7 WW UBH
Initial \$100,000 Grew to:	\$18,906,960	\$20,783,828	\$22,326,248	\$27,005,724	\$27,628,666	\$35,665,979	\$41,821,137
Annualized Compound Return	10.4%	10.6%	10.7%	11.1%	11.2%	11.7%	12.1%
Annualized Standard Deviation	17.2%	17.1%	17.2%	17.3%	17.1%	17.9%	18.5%
Difference from Portfolio 1	\$0	\$1,876,868	\$3,419,289	\$8,098,764	\$8,721,706	\$16,759,020	\$22,914,178

© 2023 The Merriman Financial Education Foundation

Note: Index returns reduced by the equivalent of a representative fund's expense ratio.

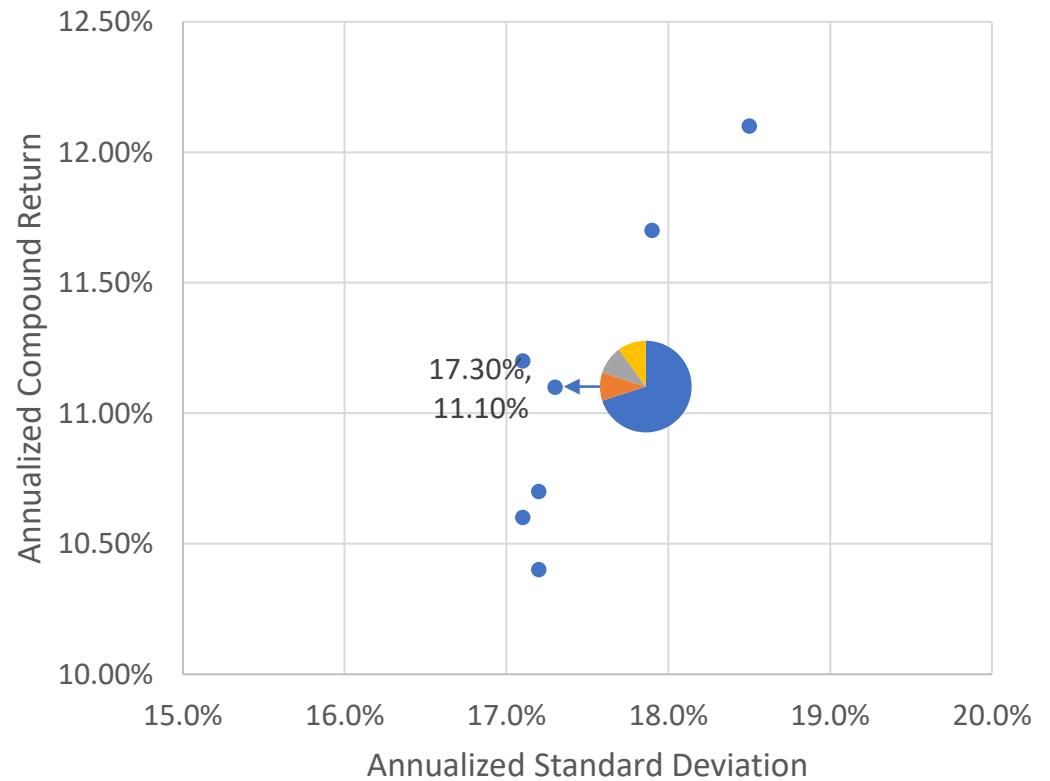
World-Wide Equity Portfolio Build-Up							
	S&P 500	+US LCV	+US SCB	+US SCV	+US REITs	+Int'l	+ EM
1970 - 2022 (53 years) (with MONTHLY rebalancing)	Portfolio 1 S&P 500	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5	Portfolio 6	Portfolio 7 WW UBH
Initial \$100,000 Grew to:	\$18,906,960	\$20,694,765	\$22,176,579	\$26,539,200	\$27,169,780	\$33,119,454	\$37,390,920
Annualized Compound Return	10.4%	10.6%	10.7%	11.1%	11.2%	11.6%	11.8%
"Annualized" Monthly Standard Dev.	17.2%	17.2%	17.5%	17.8%	17.6%	17.1%	17.5%
Difference from Portfolio 1	\$0	\$1,787,805	\$3,269,619	\$7,632,240	\$8,262,820	\$14,212,495	\$18,483,960

© 2023 The Merriman Financial Education Foundation

Note: Index returns reduced by the equivalent of a representative fund's expense ratio.

Ultimate Buy & Hold Equity Portfolio Asset Allocation (50% US/50% Int'l)										
Portfolio	S&P 500	US LCV	US SCB	US SCV	REIT	Intl LCB	Intl LCV	Intl SCB	Intl SCV	Em Mrkt
#1	100%									
#2	90%	10%								
#3	80%	10%	10%							
#4	70%	10%	10%	10%						
#5	60%	10%	10%	10%	10%					
#6	20%	10%	10%	10%	10%	10%	10%	10%	10%	
#7 / UB&H	10%	10%	10%	10%	10%	10%	10%	10%	10%	

Return versus Risk



Ultimate Buy & Hold Diversified Portfolio

Table A1 - Ultimate Buy & Hold Equity Portfolio (50% US/50% Int'l)

World-Wide Equity Portfolio Build-Up							
	S&P 500	+US LCV	+US SCB	+US SCV	+US REITs	+Int'l	+ EM
1970 - 2022 (53 years) (with ANNUAL rebalancing)	Portfolio 1 S&P 500	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5	Portfolio 6	Portfolio 7 WW UBH
Initial \$100,000 Grew to:	\$18,906,960	\$20,783,828	\$22,326,248	\$27,005,724	\$27,628,666	\$35,665,979	\$41,821,137
Annualized Compound Return	10.4%	10.6%	10.7%	11.1%	11.2%	11.7%	12.1%
Annualized Standard Deviation	17.2%	17.1%	17.2%	17.3%	17.1%	17.9%	18.5%
Difference from Portfolio 1	\$0	\$1,876,868	\$3,419,289	\$8,098,764	\$8,721,706	\$16,759,020	\$22,914,178

© 2023 The Merriman Financial Education Foundation

Note: Index returns reduced by the equivalent of a representative fund's expense ratio.

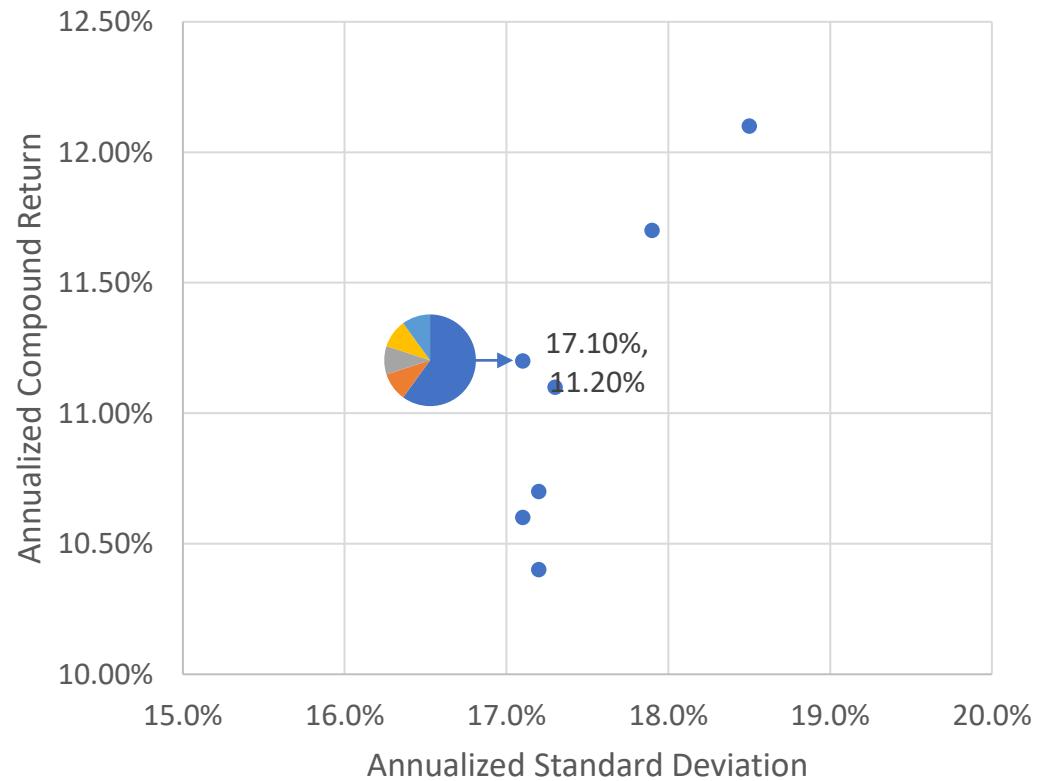
World-Wide Equity Portfolio Build-Up							
	S&P 500	+US LCV	+US SCB	+US SCV	+US REITs	+Int'l	+ EM
1970 - 2022 (53 years) (with MONTHLY rebalancing)	Portfolio 1 S&P 500	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5	Portfolio 6	Portfolio 7 WW UBH
Initial \$100,000 Grew to:	\$18,906,960	\$20,694,765	\$22,176,579	\$26,539,200	\$27,169,780	\$33,119,454	\$37,390,920
Annualized Compound Return	10.4%	10.6%	10.7%	11.1%	11.2%	11.6%	11.8%
"Annualized" Monthly Standard Dev.	17.2%	17.2%	17.5%	17.8%	17.6%	17.1%	17.5%
Difference from Portfolio 1	\$0	\$1,787,805	\$3,269,619	\$7,632,240	\$8,262,820	\$14,212,495	\$18,483,960

© 2023 The Merriman Financial Education Foundation

Note: Index returns reduced by the equivalent of a representative fund's expense ratio.

Ultimate Buy & Hold Equity Portfolio Asset Allocation (50% US/50% Int'l)										
Portfolio	S&P 500	US LCV	US SCB	US SCV	REIT	Intl LCB	Intl LCV	Intl SCB	Intl SCV	Em Mrkt
#1	100%									
#2	90%	10%								
#3	80%	10%	10%							
#4	70%	10%	10%	10%						
#5	60%	10%	10%	10%	10%					
#6	20%	10%	10%	10%	10%	10%	10%	10%	10%	
#7 / UB&H	10%	10%	10%	10%	10%	10%	10%	10%	10%	

Return versus Risk



Ultimate Buy & Hold Diversified Portfolio

Table A1 - Ultimate Buy & Hold Equity Portfolio (50% US/50% Int'l)

World-Wide Equity Portfolio Build-Up							
	S&P 500	+US LCV	+US SCB	+US SCV	+US REITs	+Int'l	+ EM
1970 - 2022 (53 years) (with ANNUAL rebalancing)	Portfolio 1 S&P 500	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5	Portfolio 6	Portfolio 7 WW UBH
Initial \$100,000 Grew to:	\$18,906,960	\$20,783,828	\$22,326,248	\$27,005,724	\$27,628,666	\$35,665,979	\$41,821,137
Annualized Compound Return	10.4%	10.6%	10.7%	11.1%	11.2%	11.7%	12.1%
Annualized Standard Deviation	17.2%	17.1%	17.2%	17.3%	17.1%	17.9%	18.5%
Difference from Portfolio 1	\$0	\$1,876,868	\$3,419,289	\$8,098,764	\$8,721,706	\$16,759,020	\$22,914,178

© 2023 The Merriman Financial Education Foundation

Note: Index returns reduced by the equivalent of a representative fund's expense ratio.

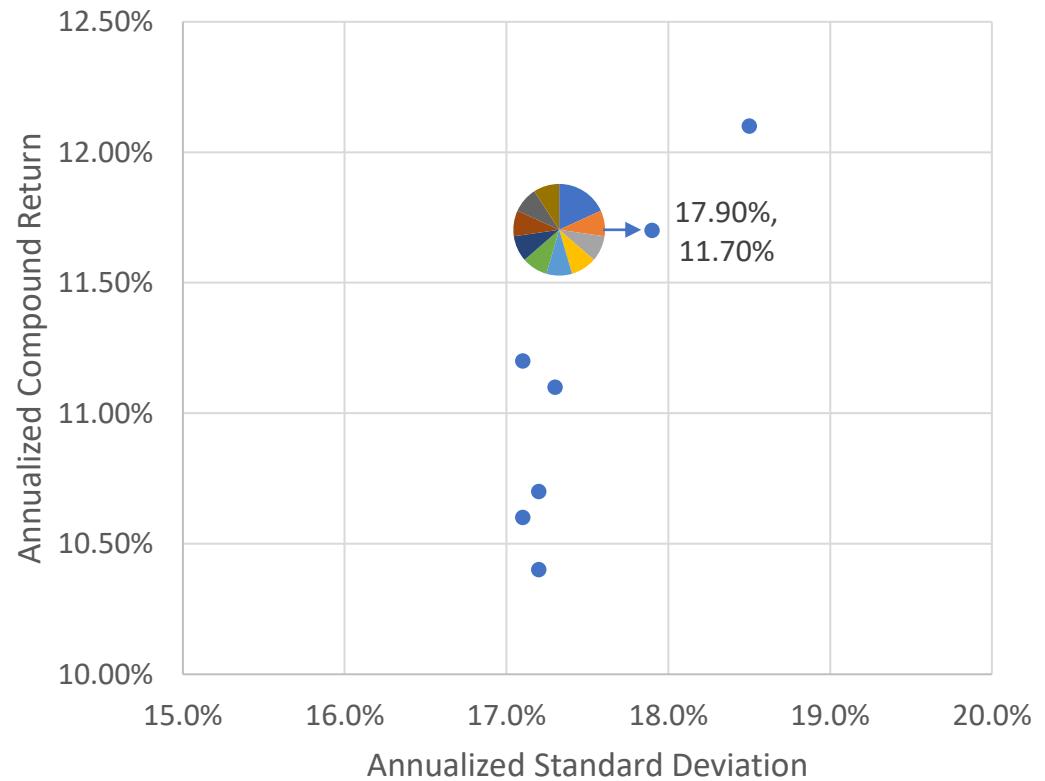
World-Wide Equity Portfolio Build-Up							
	S&P 500	+US LCV	+US SCB	+US SCV	+US REITs	+Int'l	+ EM
1970 - 2022 (53 years) (with MONTHLY rebalancing)	Portfolio 1 S&P 500	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5	Portfolio 6	Portfolio 7 WW UBH
Initial \$100,000 Grew to:	\$18,906,960	\$20,694,765	\$22,176,579	\$26,539,200	\$27,169,780	\$33,119,454	\$37,390,920
Annualized Compound Return	10.4%	10.6%	10.7%	11.1%	11.2%	11.6%	11.8%
"Annualized" Monthly Standard Dev.	17.2%	17.2%	17.5%	17.8%	17.6%	17.1%	17.5%
Difference from Portfolio 1	\$0	\$1,787,805	\$3,269,619	\$7,632,240	\$8,262,820	\$14,212,495	\$18,483,960

© 2023 The Merriman Financial Education Foundation

Note: Index returns reduced by the equivalent of a representative fund's expense ratio.

Ultimate Buy & Hold Equity Portfolio Asset Allocation (50% US/50% Int'l)										
Portfolio	S&P 500	US LCV	US SCB	US SCV	REIT	Intl LCB	Intl LCV	Intl SCB	Intl SCV	Em Mrkt
#1	100%									
#2	90%	10%								
#3	80%	10%	10%							
#4	70%	10%	10%	10%						
#5	60%	10%	10%	10%	10%					
#6	20%	10%	10%	10%	10%	10%	10%	10%	10%	
#7 / UB&H	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%

Return versus Risk



Ultimate Buy & Hold Diversified Portfolio

Table A1 - Ultimate Buy & Hold Equity Portfolio (50% US/50% Int'l)

World-Wide Equity Portfolio Build-Up							
	S&P 500	+US LCV	+US SCB	+US SCV	+US REITs	+Int'l	+ EM
1970 - 2022 (53 years) (with ANNUAL rebalancing)	Portfolio 1 S&P 500	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5	Portfolio 6	Portfolio 7 WW UBH
Initial \$100,000 Grew to:	\$18,906,960	\$20,783,828	\$22,326,248	\$27,005,724	\$27,628,666	\$35,665,979	\$41,821,137
Annualized Compound Return	10.4%	10.6%	10.7%	11.1%	11.2%	11.7%	12.1%
Annualized Standard Deviation	17.2%	17.1%	17.2%	17.3%	17.1%	17.9%	18.5%
Difference from Portfolio 1	\$0	\$1,876,868	\$3,419,289	\$8,098,764	\$8,721,706	\$16,759,020	\$22,914,178

© 2023 The Merriman Financial Education Foundation

Note: Index returns reduced by the equivalent of a representative fund's expense ratio.

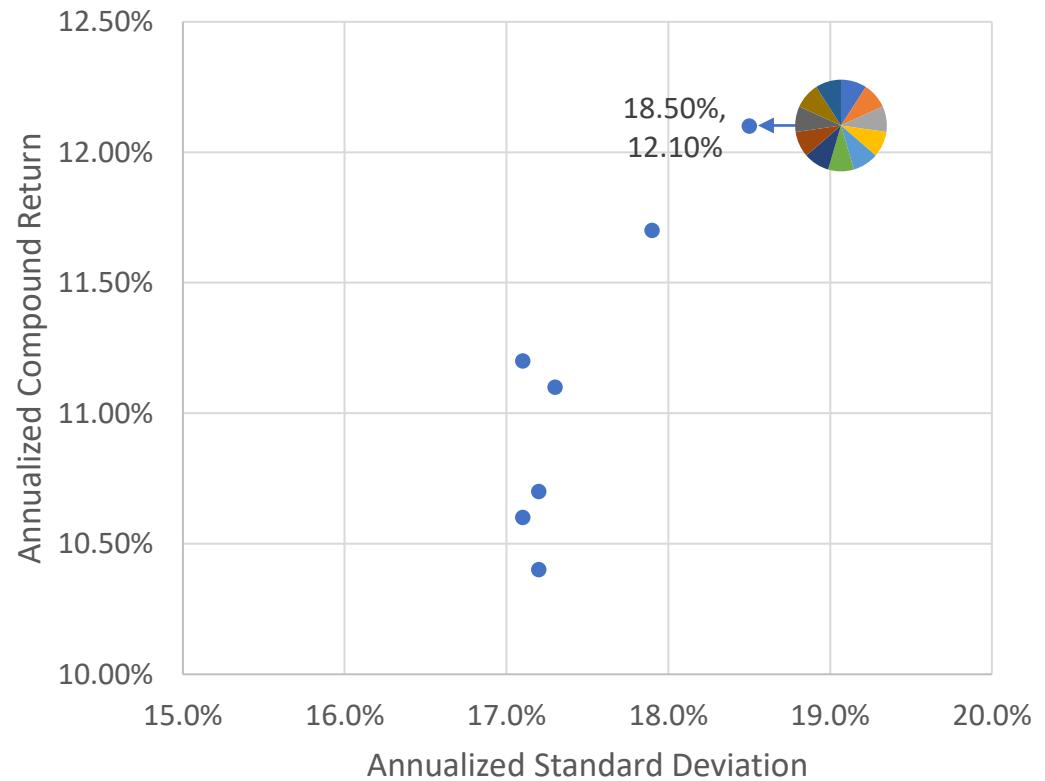
World-Wide Equity Portfolio Build-Up							
	S&P 500	+US LCV	+US SCB	+US SCV	+US REITs	+Int'l	+ EM
1970 - 2022 (53 years) (with MONTHLY rebalancing)	Portfolio 1 S&P 500	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5	Portfolio 6	Portfolio 7 WW UBH
Initial \$100,000 Grew to:	\$18,906,960	\$20,694,765	\$22,176,579	\$26,539,200	\$27,169,780	\$33,119,454	\$37,390,920
Annualized Compound Return	10.4%	10.6%	10.7%	11.1%	11.2%	11.6%	11.8%
"Annualized" Monthly Standard Dev.	17.2%	17.2%	17.5%	17.8%	17.6%	17.1%	17.5%
Difference from Portfolio 1	\$0	\$1,787,805	\$3,269,619	\$7,632,240	\$8,262,820	\$14,212,495	\$18,483,960

© 2023 The Merriman Financial Education Foundation

Note: Index returns reduced by the equivalent of a representative fund's expense ratio.

Ultimate Buy & Hold Equity Portfolio Asset Allocation (50% US/50% Int'l)										
Portfolio	S&P 500	US LCV	US SCB	US SCV	REIT	Intl LCB	Intl LCV	Intl SCB	Intl SCV	Em Mrkt
#1	100%									
#2	90%	10%								
#3	80%	10%	10%							
#4	70%	10%	10%	10%						
#5	60%	10%	10%	10%	10%					
#6	20%	10%	10%	10%	10%	10%	10%	10%	10%	
#7 / UB&H	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%

Return versus Risk



Ultimate Buy & Hold Diversified Portfolio

Table A1 - Ultimate Buy & Hold Equity Portfolio (50% US/50% Int'l)

World-Wide Equity Portfolio Build-Up							
	S&P 500	+US LCV	+US SCB	+US SCV	+US REITs	+Int'l	+ EM
1970 - 2022 (53 years) (with ANNUAL rebalancing)	Portfolio 1 S&P 500	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5	Portfolio 6	Portfolio 7 WW UBH
Initial \$100,000 Grew to:	\$18,906,960	\$20,783,828	\$22,326,248	\$27,005,724	\$27,628,666	\$35,665,979	\$41,821,137
Annualized Compound Return	10.4%	10.6%	10.7%	11.1%	11.2%	11.7%	12.1%
Annualized Standard Deviation	17.2%	17.1%	17.2%	17.3%	17.1%	17.9%	18.5%
Difference from Portfolio 1	\$0	\$1,876,868	\$3,419,289	\$8,098,764	\$8,721,706	\$16,759,020	\$22,914,178

© 2023 The Merriman Financial Education Foundation

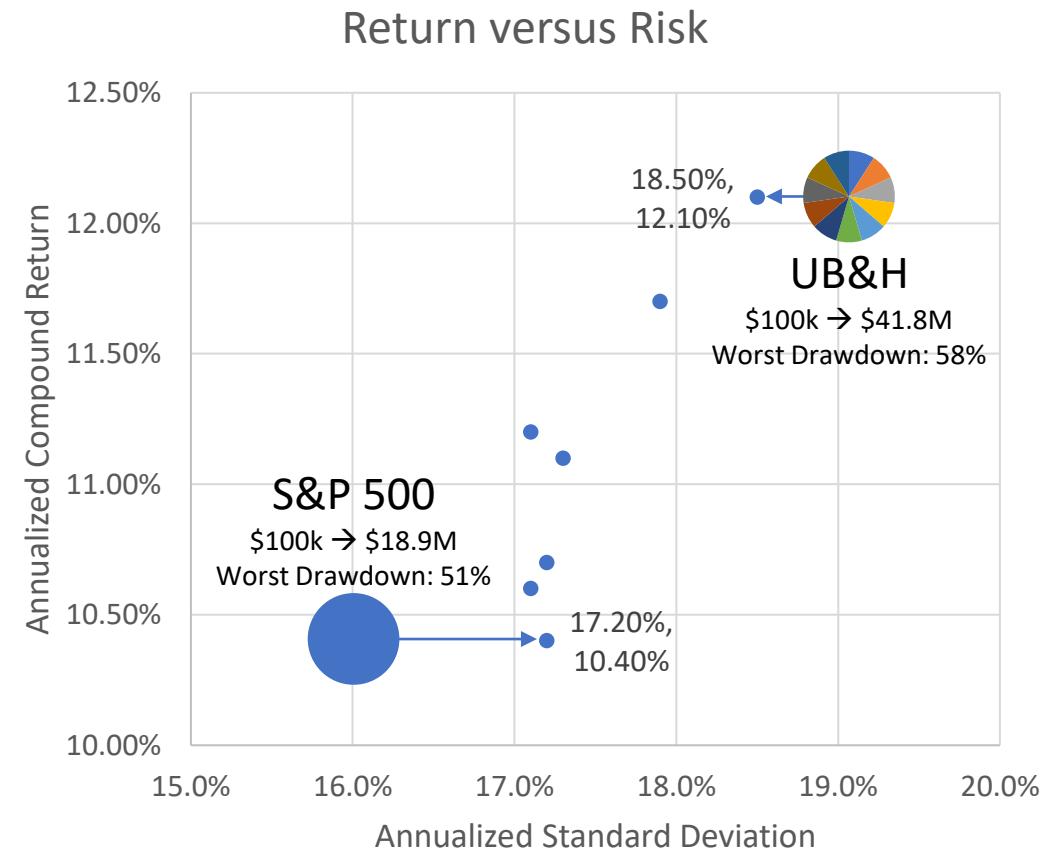
Note: Index returns reduced by the equivalent of a representative fund's expense ratio.

World-Wide Equity Portfolio Build-Up							
	S&P 500	+US LCV	+US SCB	+US SCV	+US REITs	+Int'l	+ EM
1970 - 2022 (53 years) (with MONTHLY rebalancing)	Portfolio 1 S&P 500	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5	Portfolio 6	Portfolio 7 WW UBH
Initial \$100,000 Grew to:	\$18,906,960	\$20,694,765	\$22,176,579	\$26,539,200	\$27,169,780	\$33,119,454	\$37,390,920
Annualized Compound Return	10.4%	10.6%	10.7%	11.1%	11.2%	11.6%	11.8%
"Annualized" Monthly Standard Dev.	17.2%	17.2%	17.5%	17.8%	17.6%	17.1%	17.5%
Difference from Portfolio 1	\$0	\$1,787,805	\$3,269,619	\$7,632,240	\$8,262,820	\$14,212,495	\$18,483,960

© 2023 The Merriman Financial Education Foundation

Note: Index returns reduced by the equivalent of a representative fund's expense ratio.

Ultimate Buy & Hold Equity Portfolio Asset Allocation (50% US/50% Int'l)										
Portfolio	S&P 500	US LCV	US SCB	US SCV	REIT	Intl LCB	Intl LCV	Intl SCB	Intl SCV	Em Mrkt
#1	100%									
#2	90%	10%								
#3	80%	10%	10%							
#4	70%	10%	10%	10%						
#5	60%	10%	10%	10%	10%					
#6	20%	10%	10%	10%	10%	10%	10%	10%	10%	
#7 / UB&H	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%



Ultimate Buy & Hold Diversified Portfolio

Table A1 - Ultimate Buy & Hold Equity Portfolio (50% US/50% Int'l)

World-Wide Equity Portfolio Build-Up							
	S&P 500	+US LCV	+US SCB	+US SCV	+US REITs	+Int'l	+ EM
1970 - 2022 (53 years) (with ANNUAL rebalancing)	Portfolio 1 S&P 500	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5	Portfolio 6	Portfolio 7 WW UBH
Initial \$100,000 Grew to:	\$18,906,960	\$20,783,828	\$22,326,248	\$27,005,724	\$27,628,666	\$35,665,979	\$41,821,137
Annualized Compound Return	10.4%	10.6%	10.7%	11.1%	11.2%	11.7%	12.1%
Annualized Standard Deviation	17.2%	17.1%	17.2%	17.3%	17.1%	17.9%	18.5%
Difference from Portfolio 1	\$0	\$1,876,868	\$3,419,289	\$8,098,764	\$8,721,706	\$16,759,020	\$22,914,178

© 2023 The Merriman Financial Education Foundation

Note: Index returns reduced by the equivalent of a representative fund's expense ratio.

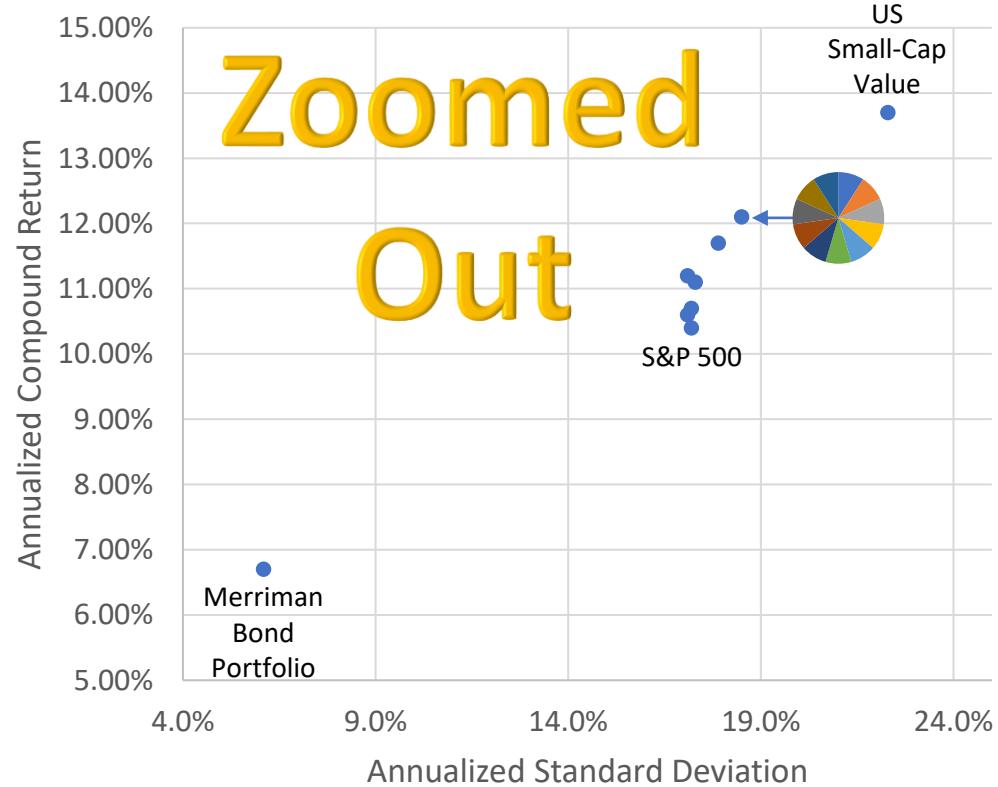
World-Wide Equity Portfolio Build-Up							
	S&P 500	+US LCV	+US SCB	+US SCV	+US REITs	+Int'l	+ EM
1970 - 2022 (53 years) (with MONTHLY rebalancing)	Portfolio 1 S&P 500	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5	Portfolio 6	Portfolio 7 WW UBH
Initial \$100,000 Grew to:	\$18,906,960	\$20,694,765	\$22,176,579	\$26,539,200	\$27,169,780	\$33,119,454	\$37,390,920
Annualized Compound Return	10.4%	10.6%	10.7%	11.1%	11.2%	11.6%	11.8%
"Annualized" Monthly Standard Dev.	17.2%	17.2%	17.5%	17.8%	17.6%	17.1%	17.5%
Difference from Portfolio 1	\$0	\$1,787,805	\$3,269,619	\$7,632,240	\$8,262,820	\$14,212,495	\$18,483,960

© 2023 The Merriman Financial Education Foundation

Note: Index returns reduced by the equivalent of a representative fund's expense ratio.

Ultimate Buy & Hold Equity Portfolio Asset Allocation (50% US/50% Int'l)										
Portfolio	S&P 500	US LCV	US SCB	US SCV	REIT	Intl LCB	Intl LCV	Intl SCB	Intl SCV	Em Mrkt
#1	100%									
#2	90%	10%								
#3	80%	10%	10%							
#4	70%	10%	10%	10%						
#5	60%	10%	10%	10%	10%					
#6	20%	10%	10%	10%	10%	10%	10%	10%	10%	
#7 / UB&H	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%

Return versus Risk



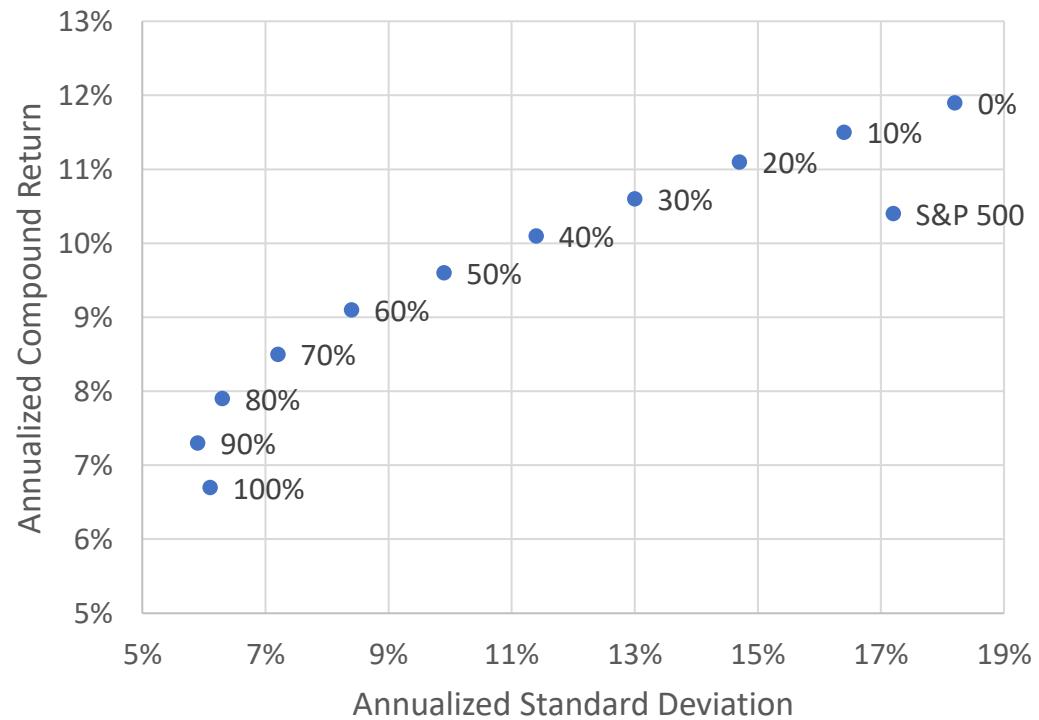
Diversifying with Fixed Income (Bonds)

Table B2a - Fine Tuning Table: WW UH Equity Portfolio (50% US/50% Int'l)
Index returns reduced by a representative fund's expense ratio, except S&P 500 Index shown below.

Year	100% Bonds	10/90	20/80	30/70	40/60	50/50	60/40	70/30	80/20	90/10	100% Equity	S&P 500 Index
1970	15.4%	14.1%	12.8%	11.5%	10.3%	8.9%	7.5%	6.2%	4.8%	3.5%	2.1%	4.0%
1971	8.3%	10.4%	12.4%	14.5%	16.6%	18.7%	20.8%	22.9%	25.1%	27.2%	29.4%	14.3%
1972	5.6%	7.4%	9.2%	11.0%	12.9%	14.8%	16.7%	18.6%	20.5%	22.5%	24.4%	19.0%
1973	6.0%	7.4%	2.1%	0.1%	-1.8%	-3.8%	-5.7%	-7.6%	-9.5%	-11.3%	-13.2%	-14.7%
1974	7.0%	2.7%	-1.5%	-5.5%	-9.4%	-13.2%	-16.9%	-20.4%	-23.9%	-27.2%	-30.4%	-26.5%
1975	9.5%	13.0%	16.5%	20.0%	23.6%	27.2%	30.9%	34.7%	38.5%	42.3%	46.2%	37.2%
1976	12.2%	13.6%	15.0%	16.3%	17.7%	19.1%	20.4%	21.8%	23.1%	24.4%	25.7%	23.8%
1977	2.9%	4.9%	7.0%	9.1%	11.3%	13.4%	15.6%	17.9%	20.2%	22.5%	24.9%	7.2%
1978	4.9%	6.9%	8.9%	11.0%	13.1%	15.2%	17.3%	19.5%	21.6%	23.8%	26.0%	6.6%
1979	7.0%	8.4%	9.8%	11.3%	12.7%	14.1%	15.5%	16.9%	18.4%	19.8%	21.2%	18.4%
1980	7.2%	9.6%	11.9%	14.2%	16.6%	18.9%	21.2%	23.5%	25.9%	28.2%	30.5%	34.0%
1981	10.8%	12.5%	13.8%	14.8%	15.8%	16.8%	17.8%	18.8%	19.8%	20.8%	21.8%	4.9%
1982	27.0%	25.2%	23.3%	21.4%	19.6%	17.7%	15.9%	14.1%	12.3%	10.5%	8.7%	21.4%
1983	8.7%	10.9%	13.2%	15.5%	17.9%	20.3%	22.7%	25.1%	27.7%	30.2%	32.8%	22.5%
1984	14.5%	13.9%	13.2%	12.5%	11.8%	11.1%	10.3%	9.6%	8.8%	8.0%	7.3%	6.3%
1985	19.4%	21.5%	23.7%	25.8%	28.0%	30.3%	32.5%	34.8%	37.2%	39.5%	41.9%	32.2%
1986	14.9%	16.4%	18.0%	19.5%	21.1%	22.7%	24.2%	25.8%	27.4%	29.0%	30.6%	18.5%
1987	4.5%	5.9%	7.3%	8.6%	9.9%	11.1%	12.2%	13.2%	14.2%	15.0%	15.8%	5.2%
1988	6.9%	8.9%	10.9%	12.9%	14.9%	17.0%	19.1%	21.2%	23.4%	25.6%	27.8%	16.8%
1989	13.3%	14.5%	15.6%	16.7%	17.9%	19.0%	20.1%	21.2%	22.3%	23.5%	24.6%	31.5%
1990	9.7%	6.9%	4.2%	1.5%	-1.2%	-3.8%	-6.3%	-8.9%	-11.4%	-13.8%	-16.2%	3.1%
1991	14.9%	16.0%	17.0%	18.0%	19.0%	20.0%	20.9%	21.9%	22.8%	23.7%	24.6%	30.5%
1992	7.0%	6.6%	6.2%	5.8%	5.4%	4.9%	4.5%	4.1%	3.6%	3.2%	2.7%	7.6%
1993	10.0%	12.0%	13.9%	15.9%	17.9%	19.9%	22.1%	24.2%	26.2%	28.3%	30.4%	10.1%
1994	3.4%	2.7%	2.0%	1.6%	1.2%	0.8%	0.7%	1.4%	2.1%	2.8%	3.5%	1.3%
1995	15.5%	15.6%	15.7%	15.8%	15.9%	16.0%	16.1%	16.2%	16.2%	16.3%	16.3%	37.6%
1996	3.4%	4.5%	5.6%	6.7%	7.8%	8.9%	10.1%	11.2%	12.3%	13.5%	14.6%	32.0%
1997	6.7%	6.7%	6.7%	6.7%	6.6%	6.5%	6.5%	6.4%	6.3%	6.2%	6.1%	33.4%
1998	8.0%	7.9%	7.8%	7.7%	7.5%	7.3%	7.0%	6.7%	6.3%	5.8%	5.3%	28.6%
1999	0.5%	2.5%	4.6%	6.7%	8.8%	10.9%	13.1%	15.3%	17.5%	19.8%	22.0%	21.0%
2000	11.3%	10.0%	8.7%	7.4%	6.1%	4.8%	3.5%	2.2%	0.9%	-0.4%	-1.6%	9.1%
2001	7.9%	7.0%	6.2%	5.3%	4.4%	3.4%	2.4%	1.4%	0.4%	-0.7%	-1.8%	11.9%
2002	11.4%	9.5%	7.6%	5.6%	3.7%	1.7%	-0.2%	-2.2%	-4.1%	-6.1%	-8.1%	22.1%
2003	3.4%	7.4%	11.5%	15.7%	20.0%	24.5%	29.1%	33.8%	38.7%	43.7%	48.9%	28.7%
2004	3.1%	5.1%	7.3%	9.4%	11.6%	13.8%	16.0%	18.2%	20.5%	22.8%	25.2%	10.9%
2005	1.7%	4.3%	5.6%	6.9%	8.1%	9.4%	10.7%	12.0%	13.3%	14.6%	14.9%	4.9%
2006	2.8%	5.0%	7.2%	9.0%	11.8%	13.6%	16.2%	18.0%	20.6%	22.3%	24.9%	10.6%
2007	8.6%	1.1%	1.5%	2.0%	2.4%	2.8%	3.2%	3.6%	4.0%	4.2%	3.5%	5.5%
2008	8.3%	2.4%	3.3%	6.7%	13.9%	15.0%	23.8%	28.4%	32.9%	37.1%	41.2%	37.0%
2009	1.1%	4.9%	6.6%	12.4%	16.2%	20.1%	23.9%	27.8%	31.7%	35.5%	39.4%	26.5%
2010	5.6%	7.3%	9.1%	10.7%	12.4%	14.0%	15.5%	17.0%	18.5%	19.9%	21.3%	15.1%
2011	7.7%	6.1%	4.5%	2.9%	1.2%	-0.5%	-2.1%	-3.8%	-5.5%	-7.2%	-9.0%	2.1%
2012	2.4%	4.1%	5.8%	7.5%	9.2%	10.9%	12.6%	14.3%	15.6%	17.7%	19.4%	15.0%
2013	-3.6%	-1.0%	1.7%	4.4%	7.2%	10.1%	13.0%	16.0%	19.0%	22.1%	25.3%	32.4%
2014	2.3%	2.5%	2.6%	2.8%	3.0%	3.1%	3.2%	3.3%	3.4%	3.5%	3.5%	13.7%
2015	0.8%	0.6%	0.3%	0.0%	-0.2%	-0.5%	-0.9%	-1.2%	-1.5%	-1.9%	-2.2%	1.4%
2016	2.1%	3.3%	4.4%	5.6%	6.7%	7.8%	8.9%	10.0%	11.1%	12.2%	13.3%	12.0%
2017	1.6%	3.4%	5.2%	7.0%	8.9%	10.8%	12.8%	14.7%	16.7%	18.7%	20.8%	21.8%
2018	0.8%	-0.7%	-2.1%	-3.5%	-4.9%	-6.4%	-7.8%	-9.2%	-10%	-12.4%	-13.6%	-11.6%
2019	7.5%	10.3%	10.6%	12.1%	13.6%	15.1%	16.5%	18.0%	19.4%	20.9%	22.2%	31.5%
2020	8.3%	8.5%	8.6%	8.5%	8.4%	8.2%	7.8%	7.3%	6.8%	6.1%	5.3%	18.4%
2021	1.1%	3.2%	5.4%	7.6%	9.9%	12.1%	14.4%	16.7%	19.1%	21.5%	23.9%	38.7%
2022	-9.9%	-10.1%	-10.2%	-10.4%	-10.6%	-10.8%	-11.0%	-11.3%	-11.6%	-11.9%	-12.2%	-18.1%
2023	4.3%	5.6%	6.8%	8.1%	9.4%	10.7%	12.0%	13.2%	14.5%	15.8%	17.0%	26.3%
Annualized Return Standard Deviation												
-7.6% -8.8% -10.1% -15.4% -20.8% -25.9% -30.7% -35.4% -39.8% -43.9% -47.9% -41.8%												
-11.2% -11.9% -16.8% -22.5% -27.8% -32.9% -37.7% -42.3% -46.6% -50.6% -43.3%												
-3.0% -1.6% -0.3% -0.9% -3.3% -5.7% -8.1% -10.5% -12.9% -15.3% -17.7% -16.1%												
0.3% 1.3% 1.6% 1.8% 1.4% 0.5% -0.3% -1.2% -2.2% 3.2% 4.2% 6.6%												
-6.1% -5.3% -11.3% -17.2% -23.5% -30.5% -37.0% -42.9% -48.4% -53.4% -58.0% -50.9%												

© 2024 The Merriman Financial Education Foundation

Annualized WW Ultimate Buy & Hold Portfolio Risk & Return vs. Bond %



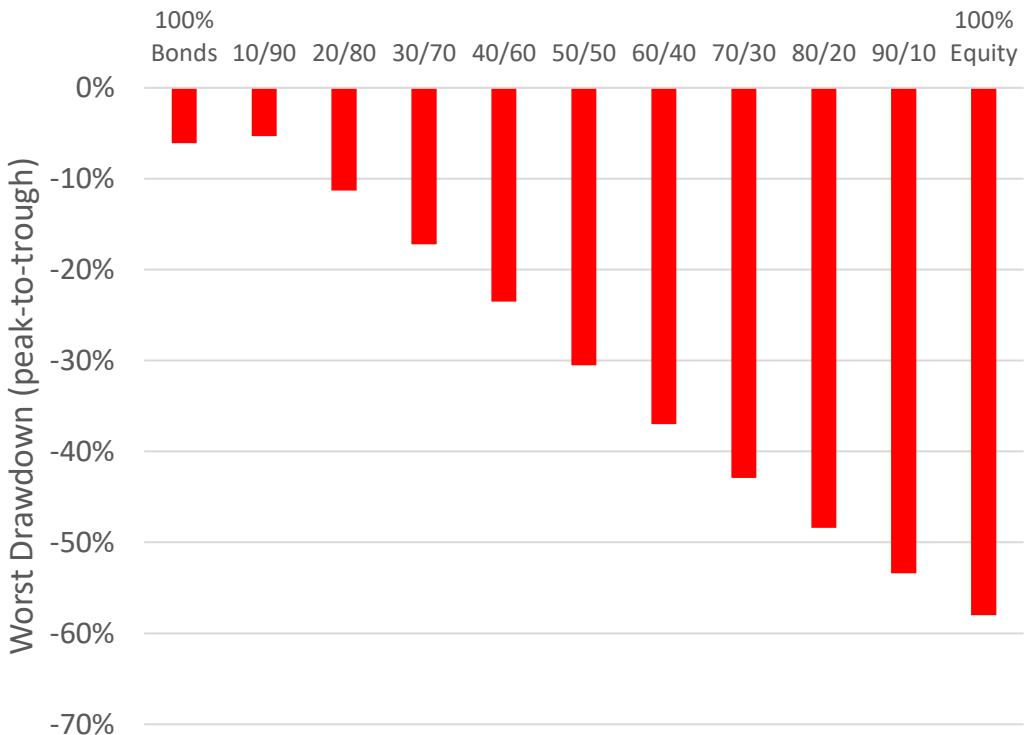
Diversifying with Fixed Income (Bonds)

Table B2a - Fine Tuning Table: WW UBH Equity Portfolio (50% US/50% Int'l)
Index returns reduced by a representative fund's expense ratio, except S&P 500 Index shown below.

Year	100% Bonds	10/90	20/80	30/70	40/60	50/50	60/40	70/30	80/20	90/10	100% Equity	S&P 500 Index
1970	15.4%	14.1%	12.8%	11.5%	10.3%	8.9%	7.5%	6.2%	4.8%	3.5%	2.1%	4.0%
1971	8.3%	10.4%	12.4%	14.5%	16.6%	18.7%	20.8%	22.9%	25.1%	27.2%	29.4%	14.3%
1972	5.6%	7.4%	9.2%	11.0%	12.9%	14.8%	16.7%	18.6%	20.5%	22.5%	24.4%	19.0%
1973	6.0%	4.0%	2.1%	0.1%	-1.8%	-3.8%	-5.7%	-7.6%	-9.5%	-11.3%	-13.2%	-14.7%
1974	7.0%	2.7%	-1.5%	-5.5%	-9.4%	-13.2%	-16.9%	-20.4%	-23.9%	-27.2%	-30.4%	-26.5%
1975	9.5%	13.0%	16.5%	20.0%	23.6%	27.2%	30.9%	34.7%	38.5%	42.3%	46.2%	37.2%
1976	12.2%	13.6%	15.0%	16.3%	17.7%	19.1%	20.4%	21.8%	23.1%	24.4%	25.7%	23.8%
1977	2.9%	4.9%	7.0%	9.1%	11.3%	13.4%	15.6%	17.9%	20.2%	22.5%	24.9%	7.2%
1978	4.9%	6.9%	8.9%	11.0%	13.1%	15.2%	17.3%	19.5%	21.6%	23.8%	26.0%	6.6%
1979	7.0%	8.4%	9.8%	11.3%	12.7%	14.1%	15.5%	16.9%	18.4%	19.8%	21.2%	18.4%
1980	7.2%	9.6%	11.9%	14.2%	16.6%	18.9%	21.2%	23.5%	25.9%	28.2%	30.5%	34.6%
1981	10.8%	12.5%	14.2%	15.8%	17.5%	19.2%	20.8%	22.5%	24.2%	25.9%	27.6%	24.9%
1982	27.0%	25.2%	23.3%	21.4%	19.6%	17.7%	15.9%	14.1%	12.3%	10.5%	8.7%	21.4%
1983	8.7%	10.9%	12.3%	13.5%	15.3%	17.9%	20.3%	22.7%	25.1%	27.7%	30.2%	22.9%
1984	14.5%	13.9%	13.2%	12.5%	11.8%	11.1%	10.3%	9.6%	8.8%	8.0%	7.3%	6.3%
1985	19.4%	21.5%	23.7%	25.8%	28.0%	30.3%	32.5%	34.8%	37.2%	39.5%	41.9%	32.2%
1986	14.9%	18.0%	19.5%	21.1%	22.7%	24.2%	25.8%	27.4%	29.0%	30.6%	31.8%	18.5%
1987	4.5%	5.9%	7.3%	8.6%	9.9%	11.1%	12.2%	13.2%	14.2%	15.0%	15.8%	5.2%
1988	6.9%	8.9%	10.9%	12.9%	14.9%	17.0%	19.1%	21.2%	23.4%	25.6%	27.8%	16.8%
1989	13.3%	14.5%	15.6%	16.7%	17.9%	19.0%	20.1%	21.2%	22.3%	23.5%	24.6%	21.5%
1990	9.7%	6.9%	4.2%	1.5%	-1.2%	-3.8%	-6.3%	-8.9%	-11.4%	-13.8%	-16.2%	3.1%
1991	14.9%	16.0%	17.0%	18.0%	19.0%	20.0%	20.9%	21.9%	22.8%	23.7%	24.6%	30.5%
1992	7.0%	6.6%	6.2%	5.8%	5.4%	4.9%	4.5%	4.1%	3.6%	3.2%	2.7%	7.6%
1993	10.0%	12.0%	13.9%	15.9%	17.9%	19.9%	21.2%	24.5%	26.2%	28.1%	30.4%	13.1%
1994	3.4%	2.7%	2.0%	1.3%	0.6%	0.0%	0.7%	1.4%	2.1%	2.8%	3.5%	1.3%
1995	15.5%	16.6%	17.5%	18.5%	19.5%	16.0%	16.1%	16.2%	16.2%	16.3%	16.3%	37.6%
1996	3.4%	4.5%	5.6%	6.7%	7.8%	8.9%	10.1%	11.2%	12.3%	13.5%	14.6%	32.0%
1997	6.7%	6.7%	6.7%	6.7%	6.6%	6.6%	6.5%	6.4%	6.3%	6.2%	6.1%	33.4%
1998	8.0%	7.9%	7.8%	7.7%	7.5%	7.3%	7.0%	6.7%	6.3%	5.8%	5.3%	28.6%
1999	0.5%	2.5%	4.6%	6.7%	8.8%	10.9%	13.1%	15.3%	17.5%	19.8%	22.0%	21.0%
2000	11.3%	10.0%	8.7%	7.4%	6.1%	4.8%	3.5%	2.2%	0.9%	-0.4%	-1.6%	9.1%
2001	7.9%	7.0%	6.2%	5.3%	4.4%	3.4%	2.4%	1.4%	0.4%	-0.7%	-1.8%	11.9%
2002	11.4%	9.5%	7.6%	5.6%	3.7%	1.7%	-0.2%	-2.2%	-4.1%	-6.1%	-8.1%	22.1%
2003	3.4%	7.4%	11.5%	15.7%	20.0%	24.5%	29.1%	33.8%	38.7%	43.7%	48.9%	28.7%
2004	3.1%	5.1%	7.3%	9.4%	11.6%	13.8%	16.0%	18.2%	20.5%	22.8%	25.2%	10.9%
2005	1.7%	3.0%	4.3%	5.6%	6.9%	8.1%	9.4%	10.7%	12.0%	13.3%	14.6%	4.9%
2006	2.8%	5.0%	7.0%	9.0%	11.0%	13.0%	16.0%	18.0%	20.0%	22.0%	24.0%	8.0%
2007	8.6%	9.1%	9.5%	9.0%	7.4%	6.2%	5.5%	4.9%	4.2%	3.5%	3.5%	5.5%
2008	8.3%	2.4%	3.3%	6.7%	13.9%	15.0%	23.8%	28.4%	32.9%	37.1%	41.2%	37.0%
2009	1.1%	4.9%	6.6%	12.4%	16.2%	20.1%	23.9%	27.8%	31.7%	35.5%	39.4%	26.5%
2010	5.6%	7.3%	9.1%	10.7%	12.4%	14.0%	15.5%	17.0%	18.5%	19.9%	21.3%	15.1%
2011	7.7%	6.1%	4.5%	2.9%	1.2%	-0.5%	-2.1%	-3.8%	-5.5%	-7.2%	-9.0%	2.1%
2012	2.4%	4.1%	5.8%	7.5%	9.2%	10.9%	12.6%	14.3%	16.0%	17.7%	19.4%	16.0%
2013	-3.6%	-1.0%	1.7%	4.4%	7.2%	10.1%	13.0%	16.0%	19.0%	22.1%	25.3%	32.4%
2014	2.3%	2.5%	2.6%	2.8%	2.9%	3.0%	3.1%	3.2%	3.3%	3.4%	3.5%	13.7%
2015	0.8%	0.6%	0.3%	0.0%	-0.2%	-0.5%	-0.9%	-1.2%	-1.5%	-1.9%	-2.2%	1.4%
2016	2.1%	3.3%	4.4%	5.6%	6.7%	7.8%	8.9%	10.0%	11.1%	12.2%	13.3%	12.0%
2017	1.6%	3.4%	5.2%	7.0%	8.9%	10.8%	12.8%	14.7%	16.7%	18.7%	20.8%	21.8%
2018	0.8%	-0.7%	-2.1%	-3.5%	-4.9%	-6.4%	-7.8%	-9.2%	-10%	-12.4%	-13.6%	-11.6%
2019	7.5%	10.5%	12.5%	13.5%	14.5%	15.5%	16.5%	17.5%	18.5%	20.0%	22.2%	31.5%
2020	8.3%	8.5%	8.6%	8.5%	8.4%	8.2%	7.8%	7.3%	6.8%	6.1%	5.3%	18.4%
2021	1.1%	3.2%	5.4%	7.6%	9.9%	12.1%	14.4%	16.7%	19.1%	21.5%	23.9%	38.7%
2022	-9.9%	-10.1%	-10.2%	-10.4%	-10.6%	-10.8%	-11.0%	-11.3%	-11.6%	-11.9%	-12.2%	-18.1%
2023	4.3%	5.6%	6.8%	8.1%	9.4%	10.7%	12.0%	13.2%	14.5%	15.8%	17.0%	26.3%
Annualized Return	6.7%	7.3%	7.9%	8.5%	9.1%	9.6%	10.1%	10.6%	11.1%	11.5%	11.9%	10.7%
Standard Deviation	6.1%	5.9%	6.3%	7.2%	8.4%	9.9%	11.4%	13.0%	14.7%	16.4%	18.2%	17.1%
Worst 6 Months	-7.6%	-8.8%	-10.1%	-20.8%	-25.9%	-30.7%	-35.4%	-39.8%	-43.9%	-47.9%	-41.8%	
Worst 12 Months	-10.5%	-11.2%	-11.9%	-16.8%	-22.5%	-27.8%	-32.7%	-37.7%	-42.3%	-46.6%	-50.6%	-43.3%
Worst 36 Mo (An'ld)	-3.0%	-1.6%	-0.3%	-3.3%	-5.7%	-8.1%	-10.5%	-12.9%	-15.3%	-17.7%	-16.1%	
Worst 60 Mos Annualized	0.3%	1.3%	1.6%	1.8%	1.4%	0.5%	-0.3%	-1.2%	-2.2%	-3.2%	-4.2%	6.6%
Worst Drawdown	-6.1%	-5.3%	-11.3%	-17.2%	-23.5%	-30.5%	-37.0%	-42.9%	-48.4%	-53.4%	-58.0%	-50.9%

© 2024 The Merriman Financial Education Foundation

WW Ultimate Buy & Hold Portfolio Worst Drawdown vs. Bond %



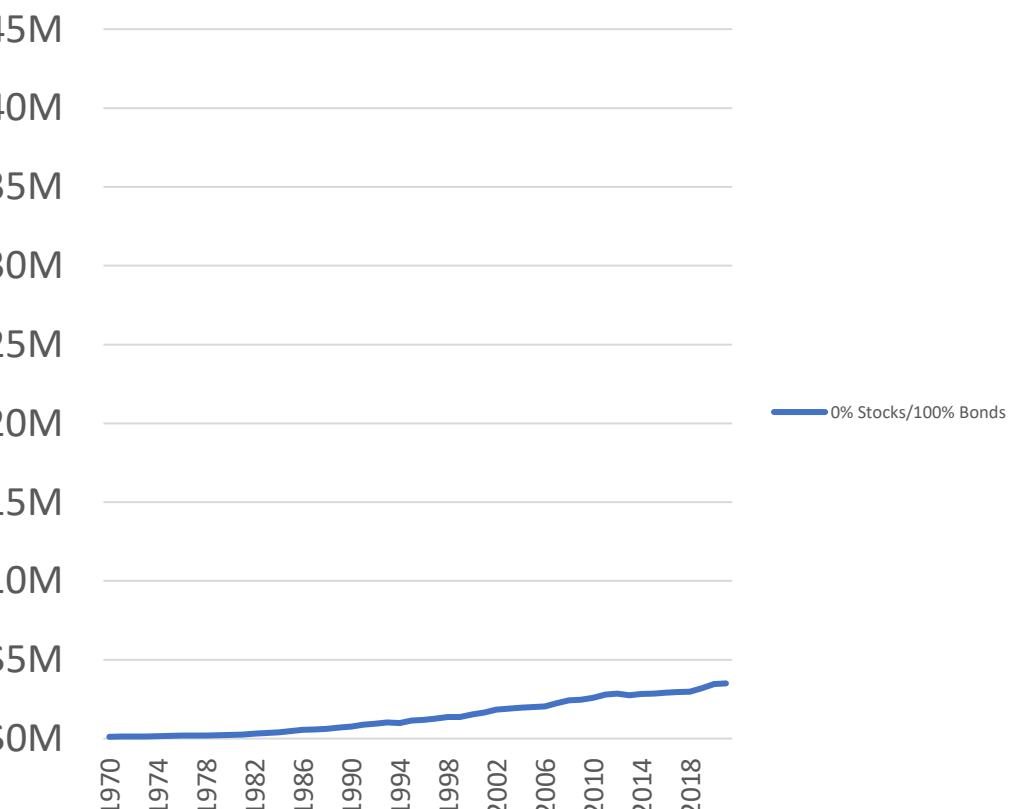
Diversifying with Fixed Income (Bonds)

Table B2a - Fine Tuning Table: WW UBH Equity Portfolio (50% US/50% Int'l)
Index returns reduced by a representative fund's expense ratio, except S&P 500 Index shown below.

Year	100% Bonds	10/90	20/80	30/70	40/60	50/50	60/40	70/30	80/20	90/10	100% Equity	S&P 500 Index
1970	15.4%	14.1%	12.8%	11.5%	10.3%	8.9%	7.5%	6.2%	4.8%	3.5%	2.1%	4.0%
1971	8.3%	10.4%	12.4%	14.5%	16.6%	18.7%	20.8%	22.9%	25.1%	27.2%	29.4%	14.3%
1972	5.6%	7.4%	9.2%	11.0%	12.9%	14.8%	16.7%	18.6%	20.5%	22.5%	24.4%	19.0%
1973	6.0%	4.0%	2.1%	0.1%	-1.8%	-3.8%	-5.7%	-7.6%	-9.5%	-11.3%	-13.2%	-14.7%
1974	7.0%	2.7%	-1.5%	-5.5%	-9.4%	-13.2%	-16.9%	-20.4%	-23.9%	-27.2%	-30.4%	-26.5%
1975	9.5%	13.0%	16.5%	20.0%	23.6%	27.2%	30.9%	34.7%	38.5%	42.3%	46.2%	37.2%
1976	12.2%	13.6%	15.0%	16.3%	17.7%	19.1%	20.4%	21.8%	23.1%	24.4%	25.7%	23.8%
1977	2.9%	4.9%	7.0%	9.1%	11.3%	13.4%	15.6%	17.9%	20.2%	22.5%	24.9%	7.2%
1978	4.9%	6.9%	8.9%	11.0%	13.1%	15.2%	17.9%	19.5%	21.6%	23.8%	26.0%	6.6%
1979	7.0%	8.4%	9.8%	11.3%	12.7%	14.1%	15.5%	16.9%	18.4%	19.8%	21.2%	18.4%
1980	7.2%	9.6%	11.9%	14.2%	16.6%	18.9%	21.2%	23.5%	25.9%	28.2%	30.5%	34.0%
1981	10.8%	12.5%	14.2%	15.8%	17.5%	19.2%	20.8%	22.5%	24.2%	25.9%	27.6%	4.9%
1982	27.0%	25.2%	23.3%	21.4%	19.6%	17.7%	15.9%	14.1%	12.3%	10.5%	8.7%	21.4%
1983	10.9%	13.2%	15.5%	17.9%	20.3%	22.7%	25.1%	27.7%	30.2%	32.8%	32.5%	
1984	14.5%	13.9%	13.2%	12.5%	11.8%	11.1%	10.3%	9.6%	8.8%	8.0%	7.3%	6.3%
1985	19.4%	21.5%	23.7%	25.8%	28.0%	30.3%	32.5%	34.8%	37.2%	39.5%	41.9%	32.2%
1986	14.9%	16.4%	18.0%	19.5%	21.1%	24.2%	25.8%	27.4%	29.0%	30.6%	31.8%	18.5%
1987	4.5%	5.9%	7.3%	8.6%	9.9%	11.1%	12.2%	13.2%	14.2%	15.0%	15.8%	5.2%
1988	6.9%	8.9%	10.9%	12.9%	14.9%	17.0%	19.1%	21.2%	23.4%	25.6%	27.8%	16.8%
1989	13.3%	14.5%	15.6%	16.7%	17.9%	19.0%	20.1%	21.2%	22.3%	23.5%	24.6%	31.5%
1990	9.7%	6.9%	4.2%	1.5%	-1.2%	-3.8%	-6.3%	-8.9%	-11.4%	-13.8%	-16.2%	3.1%
1991	14.9%	16.0%	17.0%	18.0%	19.0%	20.0%	20.9%	21.9%	22.8%	23.7%	24.6%	30.5%
1992	7.0%	6.6%	5.8%	5.4%	4.9%	4.5%	4.1%	3.6%	3.2%	2.7%	7.6%	
1993	10.0%	12.0%	13.9%	15.9%	17.9%	19.9%	22.1%	24.2%	26.2%	28.3%	30.4%	10.1%
1994	3.4%	2.7%	2.0%	1.6%	1.0%	0.7%	1.4%	2.1%	2.8%	3.5%	4.2%	1.3%
1995	15.5%	15.6%	15.7%	15.8%	15.9%	16.0%	16.1%	16.2%	16.2%	16.3%	16.3%	37.6%
1996	3.4%	4.5%	5.6%	6.7%	7.8%	8.9%	10.1%	11.2%	12.3%	13.5%	14.6%	32.0%
1997	6.7%	6.7%	6.7%	6.7%	6.6%	6.6%	6.5%	6.4%	6.3%	6.2%	6.1%	33.4%
1998	8.0%	7.9%	7.8%	7.7%	7.5%	7.3%	7.0%	6.7%	6.3%	5.8%	5.3%	28.6%
1999	0.5%	2.5%	4.6%	6.7%	8.8%	10.9%	13.1%	15.3%	17.5%	19.8%	22.0%	21.0%
2000	11.3%	10.0%	8.7%	7.4%	6.1%	4.8%	3.5%	2.2%	0.9%	-0.4%	-1.6%	9.1%
2001	7.9%	6.2%	5.3%	4.4%	3.4%	2.4%	1.4%	0.4%	-0.7%	-1.8%	-11.9%	
2002	11.4%	9.5%	7.6%	5.6%	3.7%	1.7%	-0.2%	-2.2%	-4.1%	-6.1%	-8.1%	22.1%
2003	3.4%	7.4%	11.5%	15.7%	20.0%	24.5%	29.1%	33.8%	38.7%	43.7%	48.9%	28.7%
2004	3.1%	5.1%	7.3%	9.4%	11.6%	13.8%	16.0%	18.2%	20.5%	22.8%	25.2%	10.9%
2005	1.7%	4.3%	5.6%	6.9%	8.1%	9.4%	10.7%	12.0%	13.3%	14.6%	4.9%	
2006	5.0%	7.0%	8.9%	9.8%	11.8%	13.8%	16.1%	18.0%	20.6%	23.2%	25.8%	10.6%
2007	8.6%	1.1%	1.5%	2.0%	2.4%	2.8%	3.2%	3.6%	4.0%	4.2%	3.5%	5.5%
2008	8.3%	2.4%	3.3%	4.7%	6.3%	7.9%	8.9%	10.0%	11.1%	12.2%	13.3%	37.0%
2009	1.1%	4.9%	6.6%	12.4%	16.2%	20.1%	23.9%	27.8%	31.7%	35.5%	39.4%	26.5%
2010	5.6%	7.3%	9.1%	10.7%	12.4%	14.0%	15.5%	17.0%	18.5%	19.9%	21.3%	15.1%
2011	7.7%	6.1%	4.5%	2.9%	1.2%	-0.5%	-2.1%	-3.8%	-5.5%	-7.2%	-9.0%	2.1%
2012	2.4%	4.1%	5.8%	7.5%	9.2%	10.9%	12.6%	14.3%	16.0%	17.7%	19.4%	16.0%
2013	-3.6%	-1.0%	1.7%	4.4%	7.2%	10.1%	13.0%	16.0%	22.1%	25.3%	32.4%	
2014	2.3%	2.5%	2.6%	2.8%	2.9%	3.0%	3.1%	3.2%	3.3%	3.4%	3.5%	13.7%
2015	0.8%	0.6%	0.3%	0.0%	-0.2%	-0.5%	-0.9%	-1.2%	-1.5%	-1.9%	-2.2%	1.4%
2016	2.1%	3.3%	4.4%	5.6%	6.7%	7.8%	8.9%	10.0%	11.1%	12.2%	13.3%	12.0%
2017	1.6%	3.4%	5.2%	7.0%	8.9%	10.8%	12.8%	14.7%	16.7%	18.7%	20.8%	21.8%
2018	0.8%	-0.7%	-2.1%	-3.5%	-4.9%	-6.4%	-7.8%	-9.2%	-10%	-12.4%	-13.7%	1.8%
2019	7.5%	10.3%	10.6%	12.1%	13.6%	15.1%	16.5%	18.0%	19.4%	20.9%	22.2%	31.5%
2020	8.3%	8.5%	8.6%	8.5%	8.4%	8.2%	7.8%	7.3%	6.8%	6.1%	5.3%	18.4%
2021	1.1%	3.2%	5.4%	7.6%	9.9%	12.1%	14.4%	16.7%	19.1%	21.5%	23.9%	38.7%
2022	-9.9%	-10.1%	-10.2%	-10.4%	-10.6%	-10.8%	-11.0%	-11.3%	-11.6%	-11.9%	-12.2%	-18.1%
2023	4.3%	5.6%	6.8%	8.1%	9.4%	10.7%	12.0%	13.2%	14.5%	15.8%	17.0%	26.3%
Annualized Return	6.7%	7.3%	7.9%	8.5%	9.1%	9.6%	10.1%	10.6%	11.1%	11.5%	11.9%	10.7%
Standard Deviation	6.1%	5.9%	6.3%	7.2%	8.4%	9.9%	11.4%	13.0%	14.7%	16.4%	18.2%	17.1%
Worst 6 Months	-7.6%	-8.8%	-10.1%	-14.5%	-20.8%	-25.9%	-30.7%	-35.4%	-39.8%	-43.9%	-47.9%	-41.8%
Worst 12 Months	-10.5%	-11.2%	-11.9%	-16.8%	-22.5%	-27.8%	-32.9%	-37.7%	-42.3%	-46.6%	-50.6%	-43.3%
Worst 36 Mo (Anlzd)	-3.0%	-1.6%	-0.9%	-3.3%	-5.7%	-8.1%	-10.5%	-12.9%	-15.3%	-17.7%	-16.1%	
Worst 60 Mos Annualized	0.3%	1.3%	1.6%	1.8%	1.4%	0.5%	-0.3%	-1.2%	-2.2%	-3.2%	-4.2%	6.6%
Worst Drawdown	-6.1%	-5.3%	-11.3%	-17.2%	-23.5%	-30.5%	-37.0%	-42.9%	-48.4%	-53.4%	-58.0%	-50.9%

© 2024 The Merriman Financial Education Foundation

Growth of \$100k Lumpsum Investment



Diversifying with Fixed Income (Bonds)

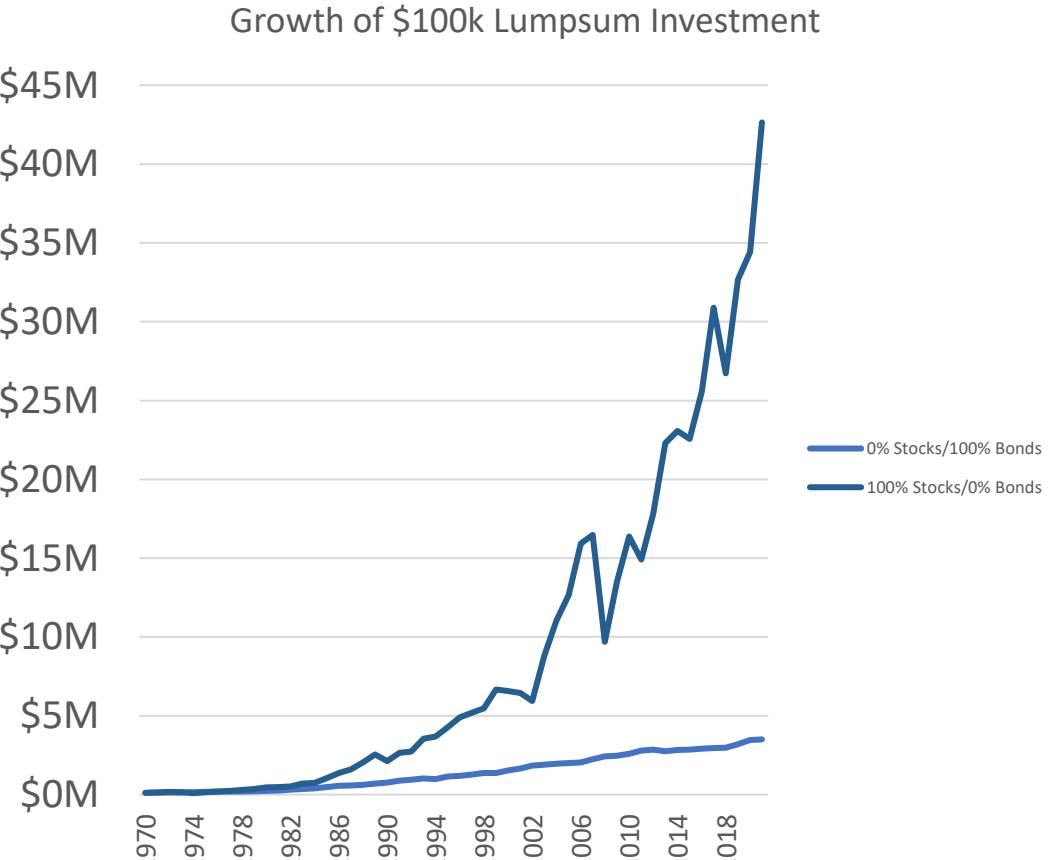
Table B2a - Fine Tuning Table: WW UBH Equity Portfolio (50% US/50% Int'l)
Index returns reduced by a representative fund's expense ratio, except S&P 500 Index shown below.

Year	100% Bonds	10/90	20/80	30/70	40/60	50/50	60/40	70/30	80/20	90/10	100% Equity	S&P 500 Index
1970	15.4%	14.1%	12.8%	11.5%	10.3%	8.9%	7.5%	6.2%	4.8%	3.5%	2.1%	4.0%
1971	8.3%	10.4%	12.4%	14.5%	16.6%	18.7%	20.8%	22.9%	25.1%	27.2%	29.4%	14.3%
1972	5.6%	7.4%	9.2%	11.0%	12.9%	14.8%	16.7%	18.6%	20.5%	22.5%	24.4%	19.0%
1973	6.0%	4.0%	2.1%	0.1%	-1.8%	-3.8%	-5.7%	-7.6%	-9.5%	-11.3%	-13.2%	-14.7%
1974	7.0%	2.7%	-1.5%	-5.5%	-9.4%	-13.2%	-16.9%	-20.4%	-23.9%	-27.2%	-30.4%	-26.5%
1975	9.5%	13.0%	16.5%	20.0%	23.6%	27.2%	30.9%	34.7%	38.5%	42.3%	46.2%	37.2%
1976	12.2%	13.6%	15.0%	16.3%	17.7%	19.1%	20.4%	21.8%	23.1%	24.4%	25.7%	23.8%
1977	2.9%	4.9%	7.0%	9.1%	11.3%	13.4%	15.6%	17.9%	20.2%	22.5%	24.9%	7.2%
1978	4.9%	6.9%	8.9%	11.0%	13.1%	15.2%	17.3%	19.5%	21.6%	23.8%	26.0%	6.6%
1979	7.0%	8.4%	9.8%	11.3%	12.7%	14.1%	15.5%	16.9%	18.4%	19.8%	21.2%	18.4%
1980	7.2%	9.6%	11.9%	14.2%	16.6%	18.9%	21.2%	23.5%	25.9%	28.2%	30.5%	34.0%
1981	10.8%	11.3%	11.8%	12.8%	13.8%	14.8%	15.8%	16.8%	17.8%	18.8%	19.8%	14.9%
1982	27.0%	25.2%	23.3%	21.4%	19.6%	17.7%	15.9%	14.1%	12.3%	10.5%	8.7%	21.4%
1983	8.7%	10.9%	12.3%	13.5%	17.9%	20.3%	22.7%	25.1%	27.7%	30.2%	32.8%	23.5%
1984	14.5%	13.9%	13.2%	12.5%	11.8%	10.3%	9.6%	8.8%	8.0%	7.3%	6.3%	12.2%
1985	19.4%	21.5%	23.7%	25.8%	28.0%	30.3%	32.5%	34.8%	37.2%	39.5%	41.9%	32.2%
1986	14.9%	16.4%	18.0%	19.5%	21.1%	22.7%	24.2%	25.8%	27.4%	29.0%	30.6%	18.5%
1987	4.5%	5.9%	7.3%	8.6%	9.9%	11.1%	12.2%	13.2%	14.2%	15.0%	15.8%	5.2%
1988	6.9%	8.9%	10.9%	12.9%	14.9%	17.0%	19.1%	21.2%	23.4%	25.6%	27.8%	16.8%
1989	13.3%	14.5%	15.6%	16.7%	17.9%	19.0%	20.1%	21.2%	22.3%	23.5%	24.6%	31.5%
1990	9.7%	6.9%	4.2%	1.5%	-1.2%	-3.8%	-6.3%	-8.9%	-11.4%	-13.8%	-16.2%	3.1%
1991	14.9%	16.0%	17.0%	18.0%	19.0%	20.0%	20.9%	21.9%	22.8%	23.7%	24.6%	30.5%
1992	7.0%	6.6%	6.2%	5.8%	5.4%	4.9%	4.5%	4.1%	3.6%	3.2%	2.7%	7.6%
1993	10.0%	12.0%	13.9%	15.9%	17.9%	19.9%	21.2%	24.1%	26.2%	28.1%	30.4%	10.1%
1994	3.4%	2.7%	2.0%	1.6%	1.0%	0.7%	1.4%	2.1%	2.8%	3.5%	4.2%	1.3%
1995	15.5%	16.6%	17.5%	18.5%	19.5%	16.0%	16.1%	16.2%	16.2%	16.3%	16.3%	37.6%
1996	3.4%	4.5%	5.6%	6.7%	7.8%	8.9%	10.1%	11.2%	12.3%	13.5%	14.6%	32.0%
1997	6.7%	6.7%	6.7%	6.6%	6.6%	6.5%	6.4%	6.3%	6.2%	6.1%	33.4%	10.0%
1998	8.0%	7.9%	7.8%	7.7%	7.5%	7.3%	7.0%	6.7%	6.3%	5.8%	5.3%	28.6%
1999	0.5%	2.5%	4.6%	6.7%	8.8%	10.9%	13.1%	15.3%	17.5%	19.8%	22.0%	21.0%
2000	11.3%	10.0%	8.7%	7.4%	6.1%	4.8%	3.5%	2.2%	0.9%	-0.4%	-1.6%	9.1%
2001	7.9%	7.0%	6.2%	5.3%	4.4%	3.4%	2.4%	1.4%	0.4%	-0.7%	-1.8%	11.9%
2002	11.4%	9.5%	7.6%	5.6%	3.7%	1.7%	-0.2%	-2.2%	-4.1%	-6.1%	-8.1%	22.1%
2003	3.4%	7.4%	11.5%	15.7%	20.0%	24.5%	29.1%	33.8%	38.7%	43.7%	48.9%	28.7%
2004	3.1%	5.1%	7.3%	9.4%	11.6%	13.8%	16.0%	18.2%	20.5%	22.8%	25.2%	10.9%
2005	1.7%	4.3%	5.6%	6.9%	8.1%	9.4%	10.7%	12.0%	13.3%	14.6%	14.9%	4.9%
2006	2.8%	5.0%	7.2%	9.0%	11.8%	13.8%	16.1%	18.8%	20.6%	23.1%	25.9%	10.6%
2007	8.6%	11.1%	12.5%	13.0%	14.0%	15.8%	16.5%	17.8%	19.0%	20.2%	21.4%	37.0%
2008	8.3%	2.4%	3.3%	6.7%	13.9%	15.0%	22.8%	23.8%	24.4%	32.9%	37.1%	-41.2%
2009	1.1%	4.9%	6.6%	12.4%	16.2%	20.1%	23.9%	27.8%	31.7%	35.5%	39.4%	26.5%
2010	5.6%	7.3%	9.1%	10.7%	12.4%	14.0%	15.5%	17.0%	18.5%	19.9%	21.3%	15.1%
2011	7.7%	6.1%	4.5%	2.9%	1.2%	-0.5%	-2.1%	-3.8%	-5.5%	-7.2%	-9.0%	2.1%
2012	2.4%	4.1%	5.8%	7.5%	9.2%	10.9%	12.6%	14.3%	16.0%	17.7%	19.4%	16.0%
2013	-3.6%	-1.0%	1.7%	4.4%	7.2%	10.1%	13.0%	16.0%	22.1%	25.3%	32.4%	10.0%
2014	2.3%	2.5%	2.6%	2.8%	2.9%	3.0%	3.1%	3.2%	3.3%	3.4%	3.5%	13.7%
2015	0.8%	0.6%	0.3%	0.0%	-0.2%	-0.5%	-0.9%	-1.2%	-1.5%	-1.9%	-2.2%	1.4%
2016	2.1%	3.3%	4.4%	5.6%	6.7%	7.8%	8.9%	10.0%	11.1%	12.2%	13.3%	12.0%
2017	1.6%	3.4%	5.2%	7.0%	8.9%	10.8%	12.8%	14.7%	16.7%	18.7%	20.8%	21.8%
2018	0.8%	-0.7%	-2.1%	-3.5%	-4.9%	-6.4%	-7.8%	-9.2%	-10%	-12.4%	-13.7%	-11.8%
2019	7.5%	10.3%	10.6%	12.1%	13.6%	15.1%	16.2%	18.0%	19.4%	20.9%	22.2%	31.5%
2020	8.3%	8.5%	8.6%	8.5%	8.4%	8.2%	7.8%	7.3%	6.8%	6.1%	5.3%	18.4%
2021	1.1%	3.2%	5.4%	7.6%	9.9%	12.1%	14.4%	16.7%	19.1%	21.5%	23.9%	38.7%
2022	9.9%	-10.1%	-10.2%	-10.4%	-10.6%	-10.8%	-11.0%	-11.3%	-11.6%	-11.9%	-12.2%	-18.1%
2023	4.3%	5.6%	6.8%	8.1%	9.4%	10.7%	12.0%	13.2%	14.5%	15.8%	17.0%	26.3%
Annualized Return	6.7%	7.3%	7.9%	8.5%	9.1%	9.6%	10.1%	10.6%	11.1%	11.5%	11.9%	10.7%
Standard Deviation	6.1%	5.9%	6.3%	7.2%	8.4%	9.9%	11.4%	13.0%	14.7%	16.4%	18.2%	17.1%
Worst 6 Months	-7.6%	-8.8%	-10.1%	-20.8%	-30.7%	-35.4%	-39.8%	-43.9%	-47.9%	-41.8%	-41.8%	-41.8%
Worst 12 Months	-10.5%	-11.2%	-11.9%	-16.8%	-22.5%	-27.8%	-32.7%	-37.7%	-42.3%	-46.6%	-50.6%	-43.3%
Worst 36 Mo (Anlzd)	-3.0%	-1.6%	-0.3%	-3.3%	-5.7%	-8.1%	-10.5%	-12.9%	-15.3%	-17.7%	-16.1%	-16.1%
Worst 60 Mos Annualized	0.3%	1.3%	1.6%	1.8%	1.4%	0.5%	-0.3%	-1.2%	-2.2%	-3.2%	-4.2%	6.6%
Worst Drawdown	-6.1%	-5.3%	-11.3%	-17.2%	-23.5%	-30.5%	-37.0%	-42.9%	-48.4%	-53.4%	-58.0%	-50.9%

© 2024 The Merriman Financial Education Foundation

UBH (50-50) - 2023 Returns.xlsx FT Table (WW UBH)

2/17/2024 12:12 PM



Diversifying with Fixed Income (Bonds)

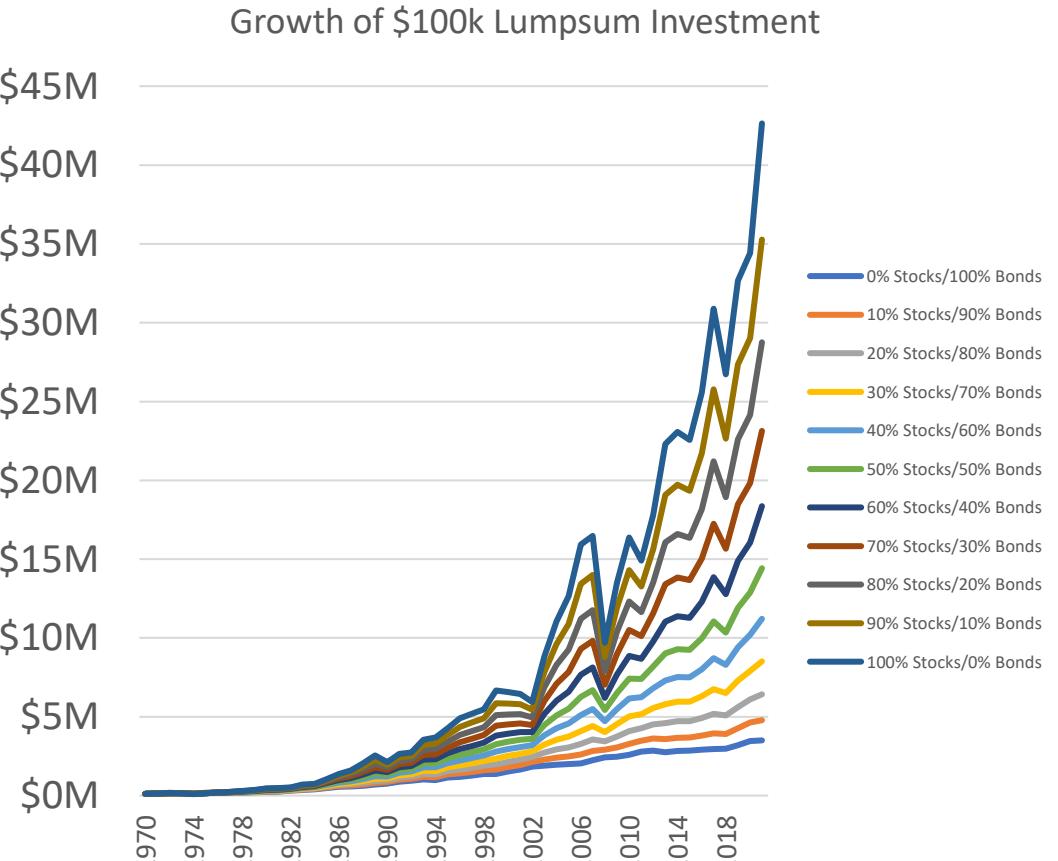
Table B2a - Fine Tuning Table: WW UBH Equity Portfolio (50% US/50% Int'l)
Index returns reduced by a representative fund's expense ratio, except S&P 500 Index shown below.

Year	100% Bonds	10/90	20/80	30/70	40/60	50/50	60/40	70/30	80/20	90/10	100% Equity	S&P 500 Index
1970	15.4%	14.1%	12.8%	11.5%	10.3%	8.9%	7.5%	6.2%	4.8%	3.5%	2.1%	4.0%
1971	8.3%	10.4%	12.4%	14.5%	16.6%	18.7%	20.8%	22.9%	25.1%	27.2%	29.4%	14.3%
1972	5.6%	7.4%	9.2%	11.0%	12.9%	14.8%	16.7%	18.6%	20.5%	22.5%	24.4%	19.0%
1973	6.0%	4.0%	2.1%	0.1%	-1.8%	-3.8%	-5.7%	-7.6%	-9.5%	-11.3%	-13.2%	-14.7%
1974	7.0%	2.7%	-1.5%	-5.5%	-9.4%	-13.2%	-16.9%	-20.4%	-23.9%	-27.2%	-30.4%	-26.5%
1975	9.5%	13.0%	16.5%	20.0%	23.6%	27.2%	30.9%	34.7%	38.5%	42.3%	46.2%	37.2%
1976	12.2%	13.6%	15.0%	16.3%	17.7%	19.1%	20.4%	21.8%	23.1%	24.4%	25.7%	23.8%
1977	2.9%	4.9%	7.0%	9.1%	11.3%	13.4%	15.6%	17.9%	20.2%	22.5%	24.9%	7.2%
1978	4.9%	6.9%	8.9%	11.0%	13.1%	15.2%	17.3%	19.5%	21.6%	23.8%	26.0%	6.6%
1979	7.0%	8.4%	9.8%	11.3%	12.7%	14.1%	15.5%	16.9%	18.4%	19.8%	21.2%	18.4%
1980	7.2%	9.6%	11.9%	14.2%	16.6%	18.9%	21.2%	23.5%	25.9%	28.2%	30.5%	34.6%
1981	10.8%	12.5%	14.2%	15.8%	17.5%	19.2%	20.8%	22.5%	24.2%	25.9%	27.6%	4.9%
1982	27.0%	25.2%	23.3%	21.4%	19.6%	17.7%	15.9%	14.1%	12.3%	10.5%	8.7%	21.4%
1983	10.9%	13.2%	15.5%	17.9%	20.3%	22.7%	25.1%	27.7%	30.2%	32.8%	32.5%	14.9%
1984	14.5%	13.9%	13.2%	12.5%	11.8%	10.3%	9.6%	8.8%	8.0%	7.3%	6.3%	14.9%
1985	19.4%	21.5%	23.7%	25.8%	28.0%	30.3%	32.5%	34.8%	37.2%	39.5%	41.9%	32.2%
1986	14.9%	16.4%	18.0%	19.5%	21.1%	22.7%	24.2%	25.8%	27.4%	29.0%	30.6%	18.5%
1987	4.5%	5.9%	7.3%	8.6%	9.9%	11.1%	12.2%	13.2%	14.2%	15.0%	15.8%	5.2%
1988	6.9%	8.9%	10.9%	12.9%	14.9%	17.0%	19.1%	21.2%	23.4%	25.6%	27.8%	16.8%
1989	13.3%	14.5%	15.6%	16.7%	17.9%	19.0%	20.1%	21.2%	22.3%	23.5%	24.6%	31.5%
1990	9.7%	6.9%	4.2%	1.5%	-1.2%	-3.8%	-6.3%	-8.9%	-11.4%	-13.8%	-16.2%	3.1%
1991	14.9%	16.0%	17.0%	18.0%	19.0%	20.0%	20.9%	21.9%	22.8%	23.7%	24.6%	30.5%
1992	7.0%	6.6%	6.2%	5.8%	5.4%	4.9%	4.5%	4.1%	3.6%	3.2%	2.7%	7.6%
1993	10.0%	12.0%	13.9%	15.9%	17.9%	19.9%	21.2%	24.1%	26.2%	28.1%	30.4%	10.1%
1994	3.4%	2.7%	2.0%	1.6%	1.2%	0.8%	0.7%	1.4%	2.1%	2.8%	3.5%	1.3%
1995	15.5%	16.6%	17.5%	18.5%	19.5%	16.0%	16.1%	16.2%	16.2%	16.3%	16.3%	37.6%
1996	3.4%	4.5%	5.6%	6.7%	7.8%	8.9%	10.1%	11.2%	12.3%	13.5%	14.6%	32.0%
1997	6.7%	6.7%	6.7%	6.7%	6.6%	6.6%	6.5%	6.4%	6.3%	6.2%	6.1%	33.4%
1998	8.0%	7.9%	7.8%	7.7%	7.5%	7.3%	7.0%	6.7%	6.3%	5.8%	5.3%	28.6%
1999	2.5%	4.6%	6.7%	8.8%	10.9%	13.1%	15.3%	17.5%	19.8%	22.0%	21.0%	2.1%
2000	11.3%	10.0%	8.7%	7.4%	6.1%	4.8%	3.5%	2.2%	0.9%	-0.4%	-1.6%	9.1%
2001	7.9%	6.2%	5.3%	4.4%	3.4%	2.4%	1.4%	0.4%	-0.7%	-1.8%	-11.9%	2.1%
2002	11.4%	9.5%	7.6%	5.6%	3.7%	1.7%	-0.2%	-2.2%	-4.1%	-6.1%	-8.1%	22.1%
2003	3.4%	7.4%	11.5%	15.7%	20.0%	24.5%	29.1%	33.8%	38.7%	43.7%	48.9%	28.7%
2004	3.1%	5.1%	7.3%	9.4%	11.6%	13.8%	16.0%	18.2%	20.5%	22.8%	25.2%	10.9%
2005	1.7%	3.0%	4.3%	5.6%	6.9%	8.1%	9.4%	10.7%	12.0%	13.3%	14.6%	4.9%
2006	2.8%	5.0%	7.2%	9.0%	10.8%	12.8%	14.6%	16.4%	18.2%	20.2%	22.9%	10.6%
2007	8.6%	11.1%	12.5%	13.0%	13.6%	14.0%	14.5%	15.0%	15.5%	15.8%	16.2%	37.0%
2008	8.3%	2.4%	3.3%	6.7%	13.9%	15.0%	23.8%	28.4%	32.9%	37.1%	41.2%	37.0%
2009	1.1%	4.9%	6.6%	12.4%	16.2%	20.1%	23.9%	27.8%	31.7%	35.5%	39.4%	26.5%
2010	5.6%	7.3%	9.1%	10.7%	12.4%	14.0%	15.5%	17.0%	18.5%	19.9%	21.3%	15.1%
2011	7.7%	6.1%	4.5%	2.9%	1.2%	-0.5%	-2.1%	-3.8%	-5.5%	-7.2%	-9.0%	2.1%
2012	2.4%	4.1%	5.8%	7.5%	9.2%	10.9%	12.6%	14.3%	16.0%	17.7%	19.4%	16.0%
2013	-3.6%	-1.0%	1.7%	4.4%	7.2%	10.1%	13.0%	16.0%	19.0%	22.1%	25.3%	32.4%
2014	2.3%	2.6%	2.8%	2.9%	3.0%	3.1%	3.2%	3.3%	3.4%	3.5%	3.5%	13.7%
2015	0.8%	0.6%	0.3%	0.0%	-0.2%	-0.5%	-0.9%	-1.2%	-1.5%	-1.9%	-2.2%	1.4%
2016	2.1%	3.3%	4.4%	5.6%	6.7%	7.8%	8.9%	10.0%	11.1%	12.2%	13.3%	12.0%
2017	1.6%	3.4%	5.2%	7.0%	8.9%	10.8%	12.8%	14.7%	16.7%	18.7%	20.8%	21.8%
2018	0.8%	-0.7%	-2.1%	-3.5%	-4.9%	-6.4%	-7.8%	-9.2%	-10%	-12.1%	-13.6%	-31.5%
2019	7.5%	10.3%	10.6%	12.1%	13.6%	14.3%	16.2%	18.0%	19.4%	20.9%	22.2%	31.5%
2020	8.3%	8.5%	8.6%	8.5%	8.4%	8.2%	7.8%	7.3%	6.8%	6.1%	5.3%	18.4%
2021	1.1%	3.2%	5.4%	7.6%	9.9%	12.1%	14.4%	16.7%	19.1%	21.5%	23.9%	38.7%
2022	9.9%	-10.1%	-10.2%	-10.4%	-10.6%	-10.8%	-11.0%	-11.3%	-11.6%	-11.9%	-12.2%	-18.1%
2023	4.3%	5.6%	6.8%	8.1%	9.4%	10.7%	12.0%	13.2%	14.5%	15.8%	17.0%	26.3%
Annualized Return	6.7%	7.3%	7.9%	8.5%	9.1%	9.6%	10.1%	10.6%	11.1%	11.5%	11.9%	10.7%
Standard Deviation	6.1%	5.9%	6.3%	7.2%	8.4%	9.9%	11.4%	13.0%	14.7%	16.4%	18.2%	17.1%
Worst 6 Months	-7.6%	-8.8%	-10.1%	-20.8%	-35.9%	-37.9%	-39.8%	-43.9%	-47.9%	-48.7%	-48.1%	
Worst 12 Months	-10.5%	-11.2%	-11.9%	-16.8%	-22.5%	-27.8%	-32.9%	-37.7%	-42.3%	-46.6%	-50.6%	-43.3%
Worst 36 Mo (Anlzd)	-3.0%	-1.6%	-0.3%	-3.3%	-5.7%	-10.5%	-12.9%	-15.3%	-17.7%	-16.1%		
Worst 60 Mos Annualized	0.3%	1.3%	1.6%	1.8%	1.4%	0.5%	-0.3%	-1.2%	-2.2%	-3.2%	-4.2%	6.6%
Worst Drawdown	-6.1%	-5.3%	-11.3%	-17.2%	-23.5%	-30.5%	-37.0%	-42.9%	-48.4%	-53.4%	-58.0%	-50.9%

© 2024 The Merriman Financial Education Foundation

UH (50-50) - 2023 Returns.xlsx FT Table (WW UH)

2/17/2024 12:12 PM



Diversifying with Fixed Income (Bonds)

Table B1 - Fine Tuning Table: S&P 500 Equity Portfolio

Index returns reduced by a representative fund's expense ratio, except S&P 500 Index shown below.

Year	100% Bonds	10/90	20/80	30/70	40/60	50/50	60/40	70/30	80/20	90/10	100% Equity	S&P 500 Index
1970	15.4%	14.4%										
1971	8.3%	9.0%										
1972	5.6%	6.9%										
1973	6.0%	3.8%										
1974	7.0%	3.4%										
1975	5.9%	12.4%										
1976	12.2%	13.4%										
1977	2.9%	1.9%										
1978	4.9%	5.1%										
1979	7.0%	8.2%										
1980	7.2%	9.8%										
1981	10.8%	9.2%										
1982	27.0%	26.6%										
1983	8.7%	10.0%										
1984	14.5%	13.7%										
1985	19.4%	20.7%										
1986	14.9%	15.4%										
1987	4.5%	5.0%										
1988	6.9%	7.9%										
1989	11.3%	15.1%										
1990	9.7%	8.4%										
1991	14.9%	16.5%										
1992	7.0%	7.1%										
1993	10.0%	10.1%										
1994	-3.4%	-2.9%										
1995	15.5%	17.6%										
1996	3.4%	5.2%										
1997	6.7%	9.2%										
1998	8.0%	10.1%										
1999	0.5%	2.4%										
2000	11.3%	9.2%										
2001	5.6%	5.9%										
2002	11.4%	7.8%										
2003	3.4%	5.8%										
2004	3.1%	3.8%										
2005	1.7%	2.1%										
2006	2.8%	4.1%										
2007	9.6%	9.2%										
2008	8.3%	2.9%										
2009	1.1%	3.6%										
2010	5.6%	6.7%										
2011	7.7%	7.2%										
2012	2.4%	3.8%										
2013	-3.6%	-0.5%										
2014	0.9%	1.0%										
2015	2.3%	2.5%										
2016	7.6%	9.9%										
2017	1.1%	3.6%										
2018	-9.9%	-10.7%										
2019	4.3%	6.3%										
2020	8.3%	9.6%										
2021	1.1%	3.6%										
2022	-9.9%	-10.7%										
2023	4.3%	6.3%										
Annualized Return												
Standard Deviation												
Worst 6 Months												
Worst 12 Months												
Worst 36 Mo (An/td)												
Worst 60 Mos Annualized												
Worst Drawdown												

© 2024 The Merriman Financial Education Fund

Page 2 of 9

© 2024 The Merriman Financial Education Fund

Page 7 of 9

UBH (50-50) - 2023 Returns.xlsx FT Table (WW All SCV)

2/17/2024 12:12 PM

Table B2a - Fine Tuning Table: WW UBH Equity Portfolio (50% US/50% Int'l)

Index returns reduced by a representative fund's expense ratio, except S&P 500 Index shown below.

Year	100% Bonds	10/90	20/80	30/70	40/60	50/50	60/40	70/30	80/20	90/10	100% Equity	S&P 500 Index
1970	15.4%	14.4%										
1971	8.3%	9.0%										
1972	5.6%	6.9%										
1973	6.0%	3.8%										
1974	7.0%	3.4%										
1975	12.2%	13.4%										
1976	2.9%	1.9%										
1977	4.9%	5.1%										
1978	7.0%	2.7%										
1979	9.5%	13.0%										
1980	7.2%	9.6%										
1981	12.2%	13.6%										
1982	2.9%	4.9%										
1983	4.9%	6.9%										
1984	7.0%	8.4%										
1985	14.5%	12.1%										
1986	10.8%	11.3%										
1987	5.6%	6.8%										
1988	6.0%	4.0%										
1989	6.0%	4.0%										
1990	15.4%	13.6%										
1991	15.4%	14.5%										
1992	6.0%	3.6%										
1993	10.8%	11.3%										
1994	8.7%	11.8%										
1995	14.5%	13.8%										
1996	12.3%	11.5%										
1997	2.9%	6.7%										
1998	4.9%	7.5%										
1999	7.0%	8.9%										
2000	7.2%	9.3%										
2001	15.4%	13.6%										
2002	2.9%	4.5%										
2003	4.9%	5.9%										
2004	6.0%	4.0%										
2005	9.7%	10.4%										
2006	11.3%	10.0%										
2007	7.0%	7.0%										
2008	8.0%	7.9%										
2009	0.5%	2.5%										
2010	11.3%	10.5%										
2011	7.0%	8.4%										
2012	2.1%	3.3%										
2013	1.1%	3.4%										
2014	0.8%	0.6%										
2015	1.1%	1.1%										
2016	2.1%	3.8%										
2017	1.1%	4.1%										
2018	0.8%	0.7%										
2019	1.1%	4.7%										
2020	5.6%	7.7%										
2021	7.5%	3.7%										
2022	2.4%	4.4%										
2023	1.1%	4.9%										
Annualized Return												
Standard Deviation												
Worst 6 Months												
Worst 12 Months												
Worst 36 Mo (An/td)												
Worst 60 Mos Annualized												
Worst Drawdown												

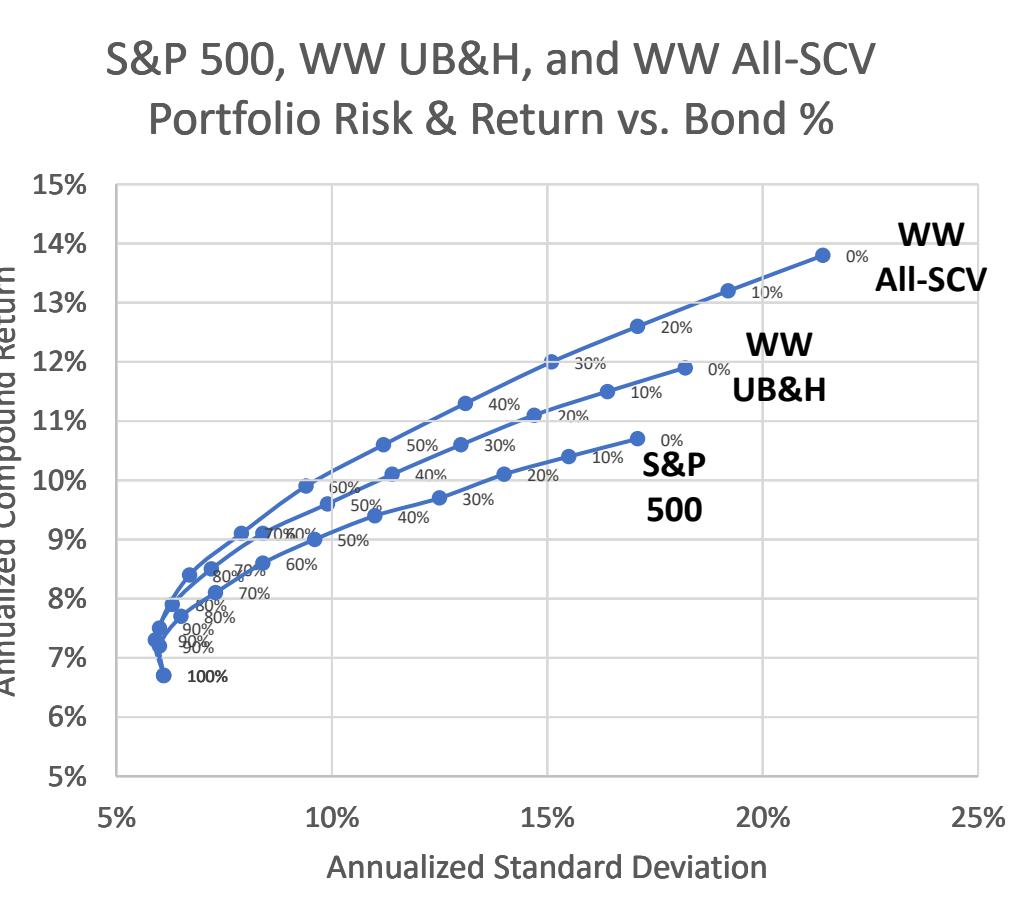
© 2024 The Merriman Financial Education Fund

Page 2 of 9

© 2024 The Merriman Financial Education Fund

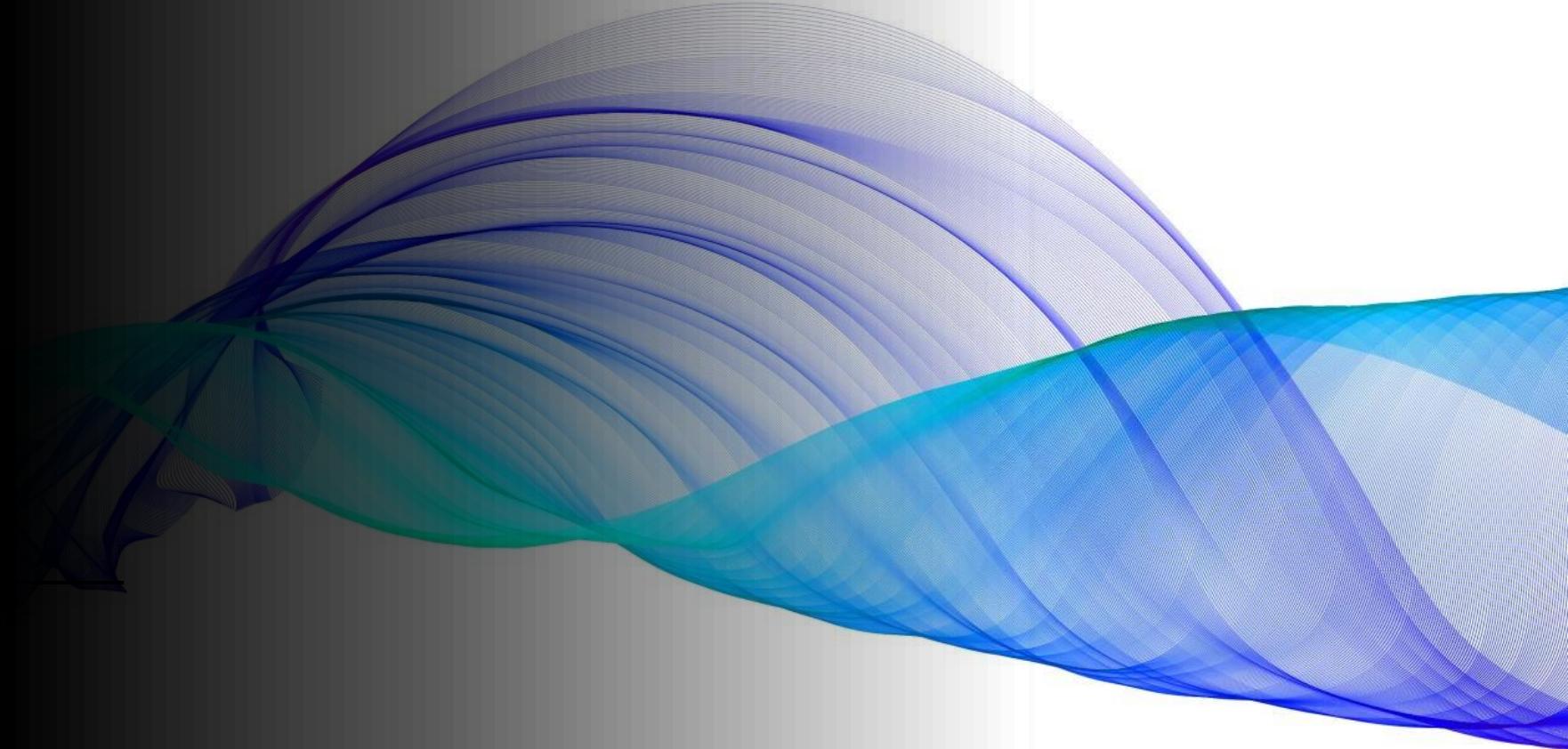
UBH (50-50) - 2023 Returns.xlsx FT Table (WW All SCV)

2/17/2024 12:12 PM





Simplicity vs. Complexity



Merriman Sound Investing Portfolios

Sound Investing Portfolios - Asset Allocations (Worldwide (WW) portfolios: 50% US / 50% Int'l)

Portfolio	S&P 500	US LCV	US SCB	US SCV	REIT	Intl LCB	Intl LCV	Intl SCB	Intl SCV	Em Mrkt
S&P 500	100%									
WW UBH	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
WW 4-Fund	25%			25%			25%	25%		
US 4-Fund	25%	25%	25%	25%						
WW All Value		25%		25%			20%		20%	10%
US All Value		50%		50%						
WW All SCV				50%					50%	
US All SCV				100%						
US 2-Fund	50%			50%						

© 2023 The Merriman Financial Education Foundation

LCV = Large-Cap Value, SCB = Small-Cap Value, REIT = Real Estate Investment Trust, LCB = Large-Cap Blend, UBH = Ultimate Buy & Hold

Merriman Sound Investing Portfolios

Half Large, Half Small, Half Blend, Half Value

Sound Investing Portfolios - Asset Allocations (Worldwide (WW) portfolios: 50% US / 50% Int'l)

Portfolio	S&P 500	US LCV	US SCB	US SCV	REIT	Intl LCB	Intl LCV	Intl SCB	Intl SCV	Em Mrkt	Annual Return	Worst Drawdown
S&P 500	100%											
WW UBH	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	11.8%	-41.2%
WW 4-Fund	25%			25%			25%	25%			11.9%	-40.9%
US 4-Fund	25%	25%	25%	25%							12.0%	-37.6%
WW All Value		25%		25%			20%		20%	10%		
US All Value		50%		50%								
WW All SCV				50%					50%			
US All SCV				100%								
US 2-Fund	50%			50%							12.2%	-36.8%

© 2023 The Merriman Financial Education Foundation

LCV = Large-Cap Value, SCB = Small-Cap Value, REIT = Real Estate Investment Trust, LCB = Large-Cap Blend, UBH = Ultimate Buy & Hold

Merriman Sound Investing Portfolios

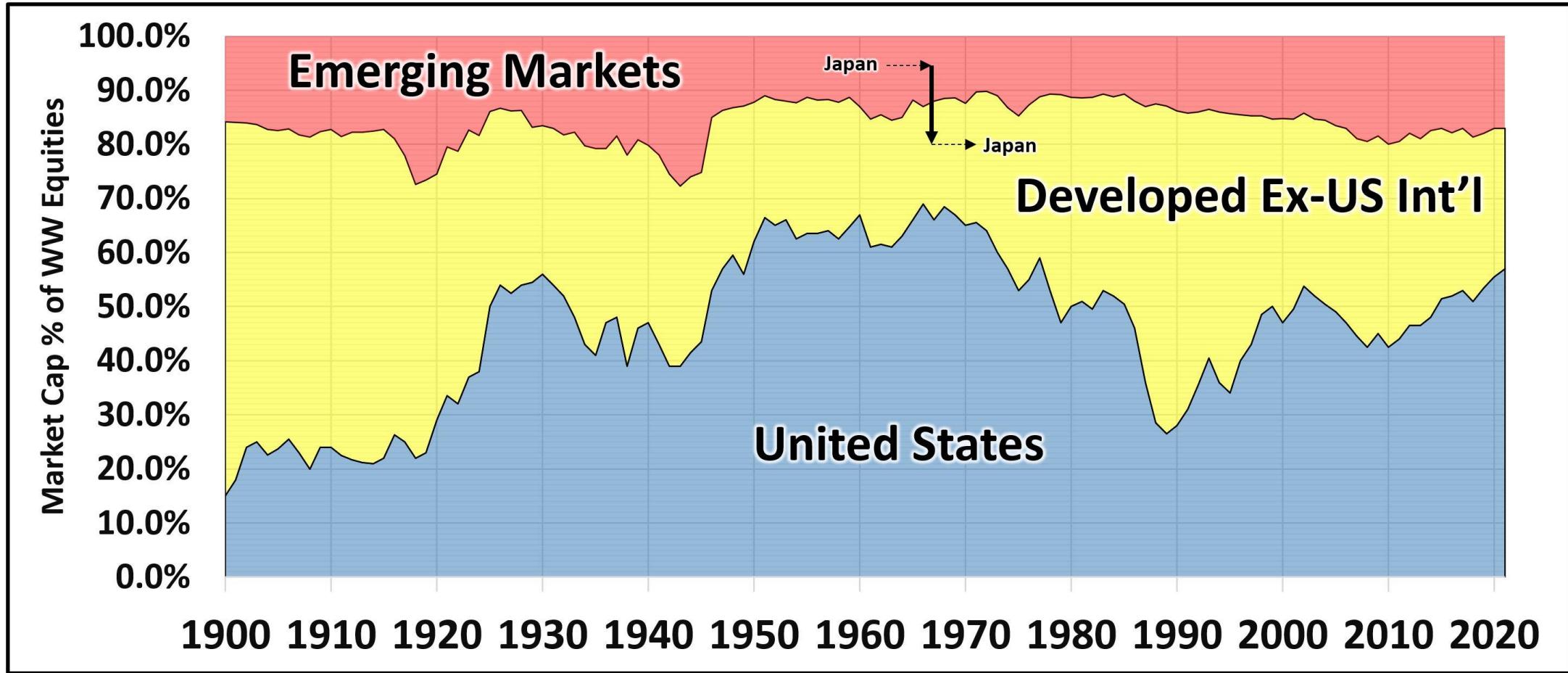
Half Large, Half Small, Half Blend, Half Value

Sound Investing Portfolios - Asset Allocations (Worldwide (WW) portfolios: 50% US / 50% Int'l)

Portfolio	S&P 500	US LCV	US SCB	US SCV	REIT	Intl LCB	Intl LCV	Intl SCB	Intl SCV	Em Mrkt	Annual Return	Worst Drawdown
S&P 500	100%										11.8%	-41.2%
WW UBH	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	11.9%	-40.9%
WW 4-Fund	25%			25%			25%	25%			12.0%	-37.6%
US 4-Fund	25%	25%	25%	25%								
WW All Value		25%		25%			20%		20%	10%		
US All Value		50%		50%								
WW All SCV				50%						50%		
US All SCV				100%								
US 2-Fund	50%			50%							12.2%	-36.8%
2 Funds for Life -- 50% Vanguard-Like Target-Date Fund, 50% US Small-Cap Value (25 Years or More Before Retirement)											12.1%	-41.0%

© 2023 The Merriman Financial Education Foundation

LCV = Large-Cap Value, SCB = Small-Cap Value, REIT = Real Estate Investment Trust, LCB = Large-Cap Blend, UBH = Ultimate Buy & Hold



Geographic diversification is a hedge,
not a factor

Implications for Accumulators & Retirees



Scenarios for Accumulators & Retirees

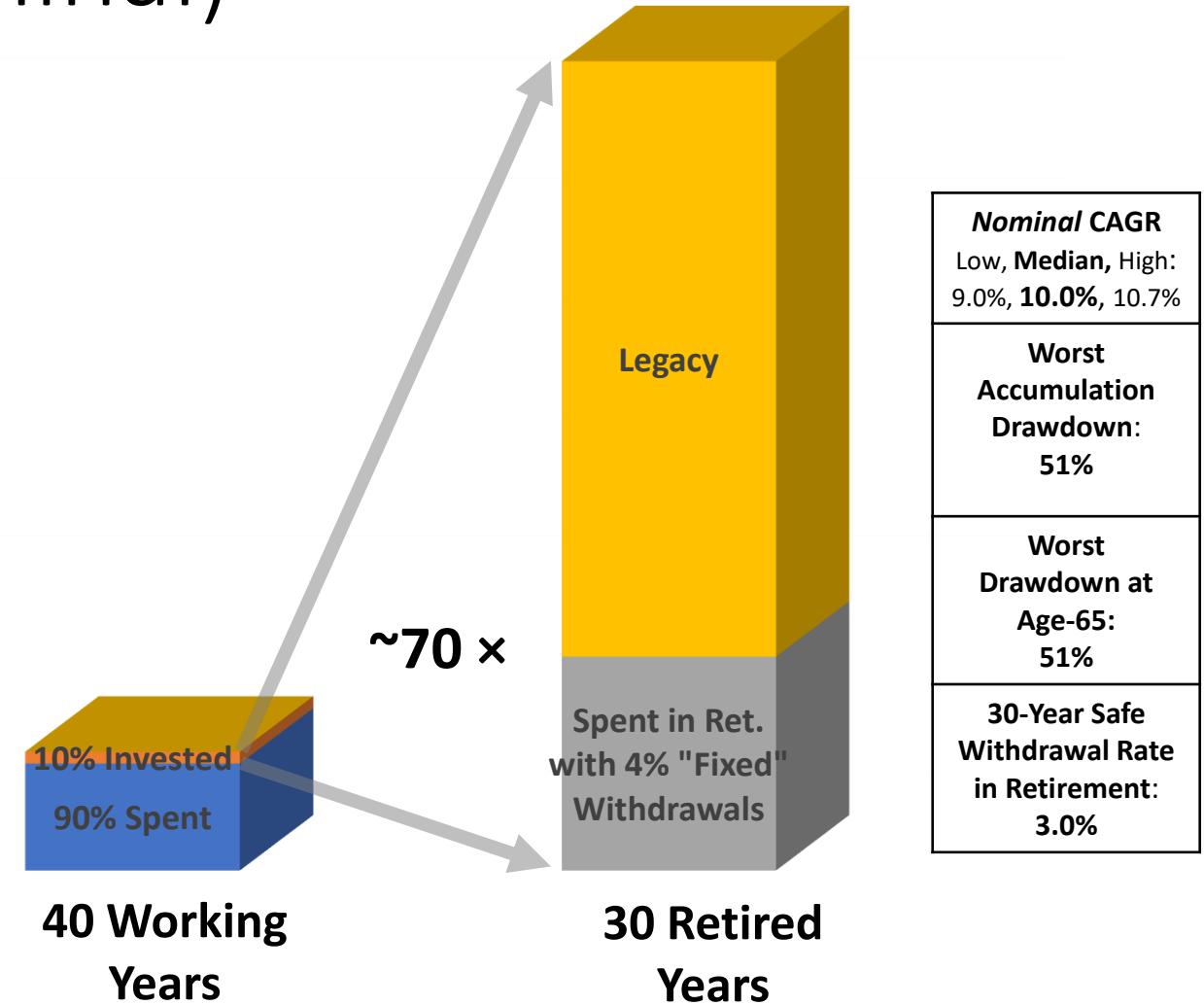
Real-world investors add time diversification

- Dollar-cost averaging contributions
- Dollar-sale averaging withdrawals

Lifetime Scenario for Modeling

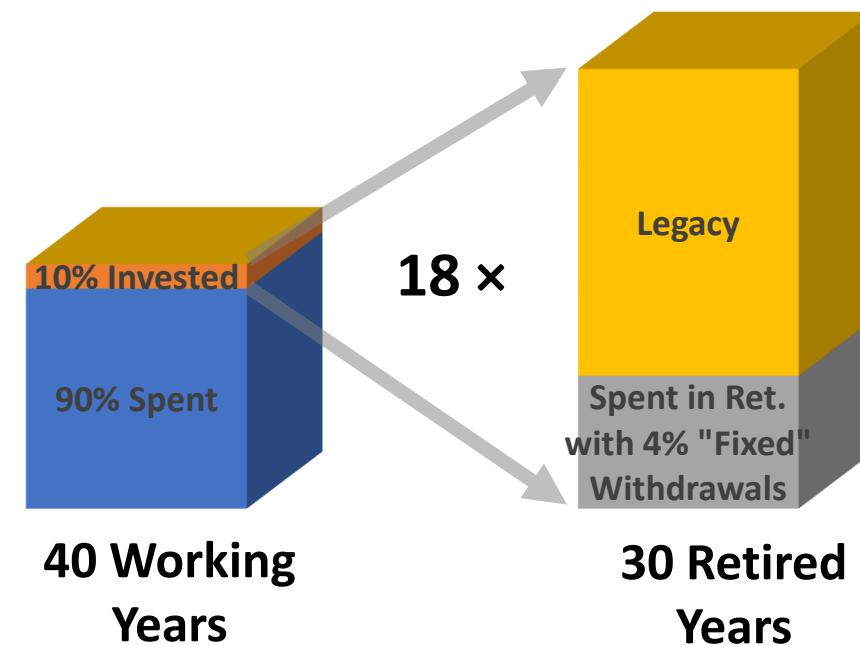
- 40-years of accumulation at 10% savings rate
- 30-years of retirement withdrawals
 - 4% “Fixed”
 - Take 4% of portfolio out in year 1
 - Increase withdrawal by inflation in future years

Just the S&P 500 (Nominal)



Just the S&P 500 (*Real*)

- + Tracks the market
- + Historically very effective
- High volatility throughout
- Worst drawdowns are most likely in retirement
- Legacy >> spending
- Only 3% Safe Withdrawal Rate

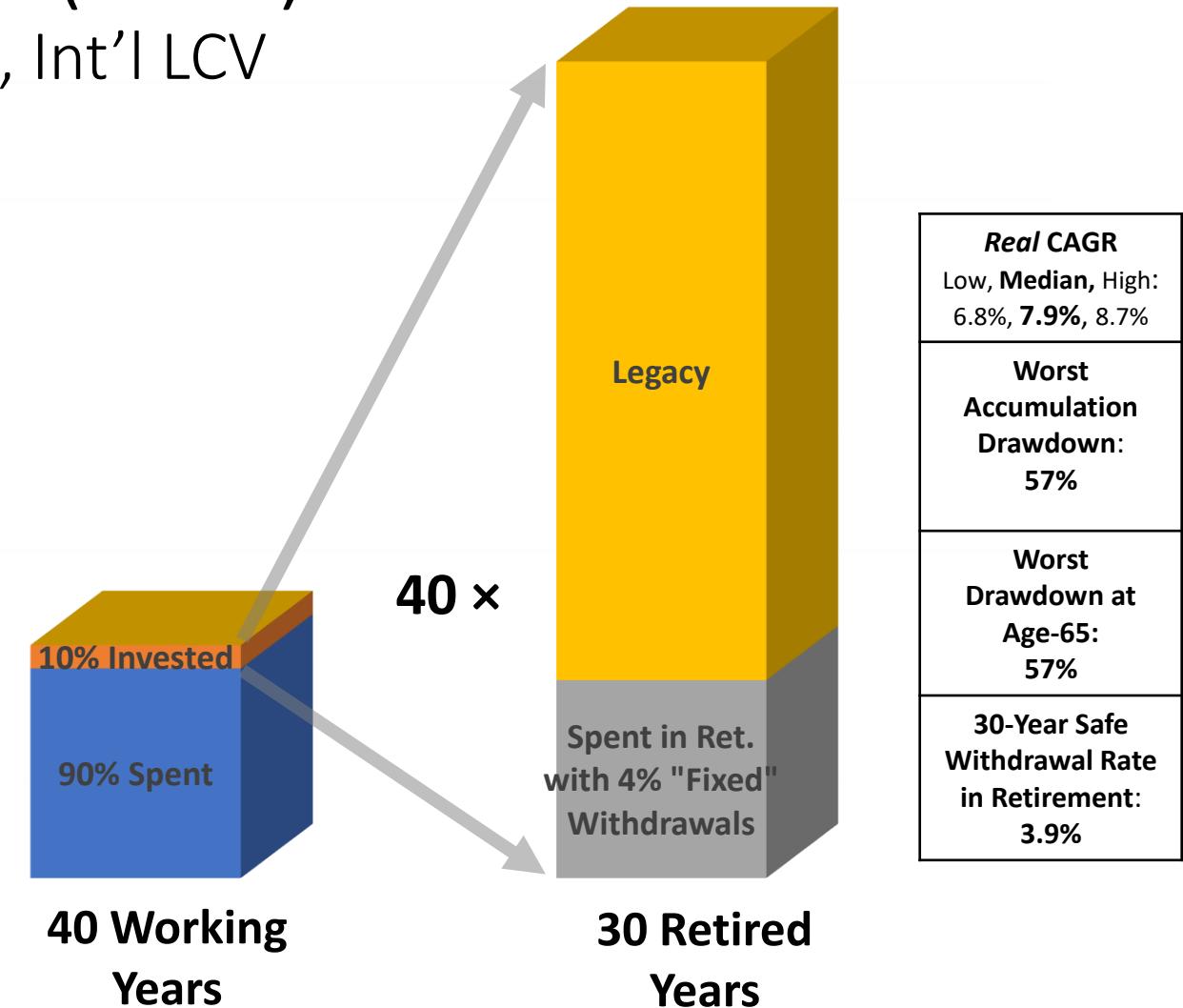


Real CAGR Low, Median, High: 4.8%, 5.9%, 6.6%
Worst Accumulation Drawdown: 51%
Worst Drawdown at Age-65: 51%
30-Year Safe Withdrawal Rate in Retirement: 3.0%

Merriman WW 4-Fund (*Real*)

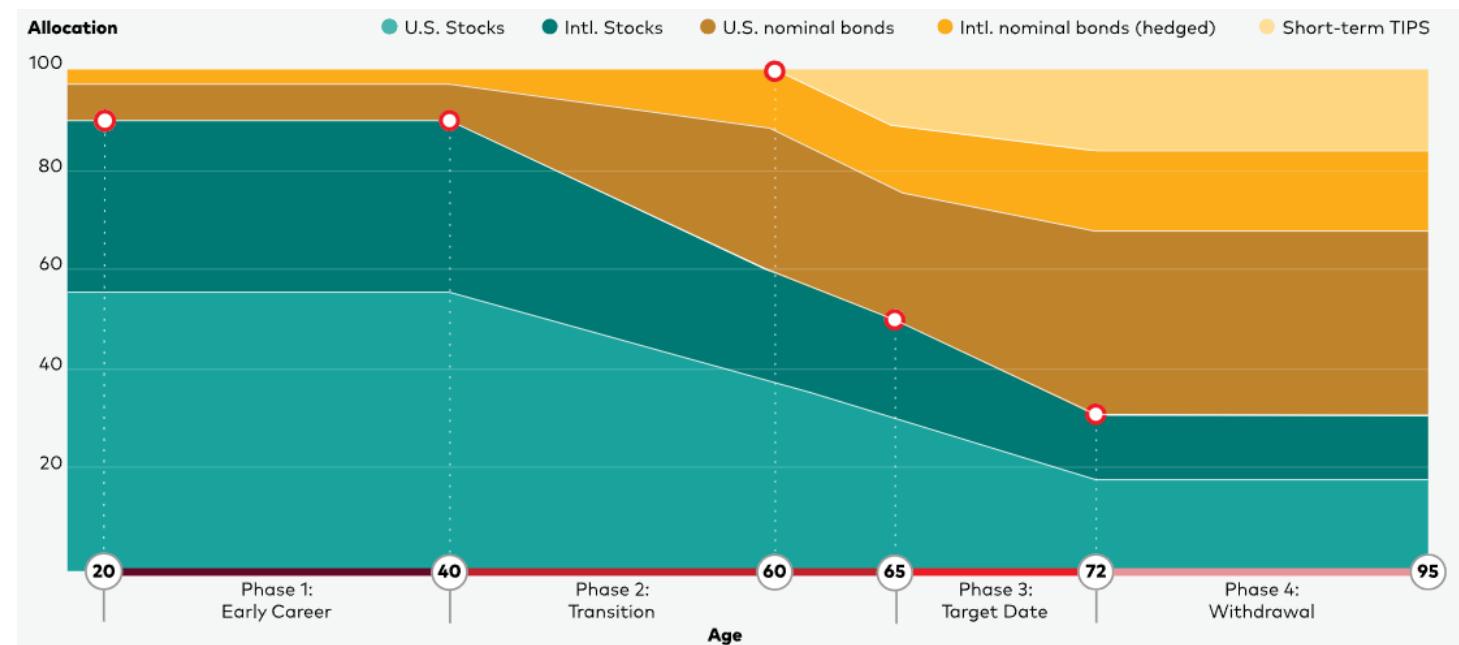
25% Each US LCB, US SCV, Int'l SCB, Int'l LCV

- + Massively diversified
- + > 2x S&P 500 over lifetime
- + 3.9% Safe Withdrawal Rate
- Doesn't track the market
- High volatility throughout
- Worst drawdowns are most likely in retirement
- Legacy >> Spending



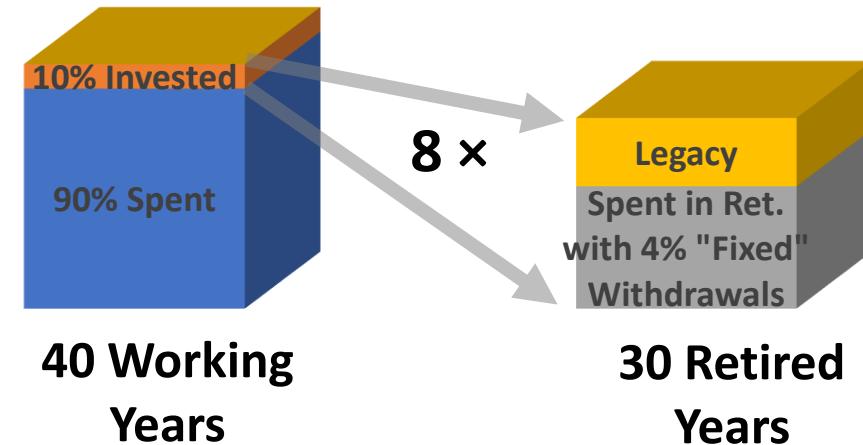
Vanguard Target Retirement Funds

- Target Retirement 2015 (VTXVX)
- Target Retirement 2020 (VTWNX)
- Target Retirement 2025 (VTTVX)
- Target Retirement 2030 (VTHRX)
- Target Retirement 2035 (VTTHX)
- Target Retirement 2040 (VFORX)
- Target Retirement 2045 (VTIVX)
- Target Retirement 2050 (VFIFX)
- Target Retirement 2055 (VFFVX)
- Target Retirement 2060 (VTTSX)
- Target Retirement 2065 (VLVX)

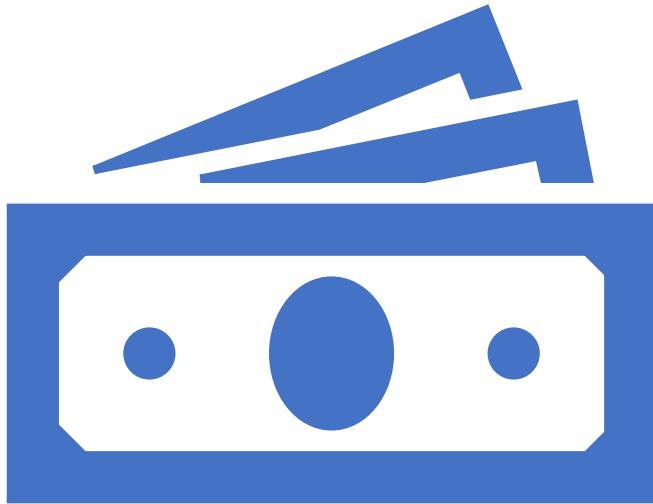


Vanguard-Like Target-Date Fund (Real)

- + Automatic for life!
- + Volatility declines w/ age
- + 3.7% safe withdrawal rate
- + Spend > legacy
- Lower total return



Real CAGR Low, Median, High: 4.3%, 5.2% , 5.6%
Worst Accumulation Drawdown: 42% (48% w/o contributions)
Worst Drawdown at Age-65: 27%
30-Year Safe Withdrawal Rate in Retirement: 3.7%



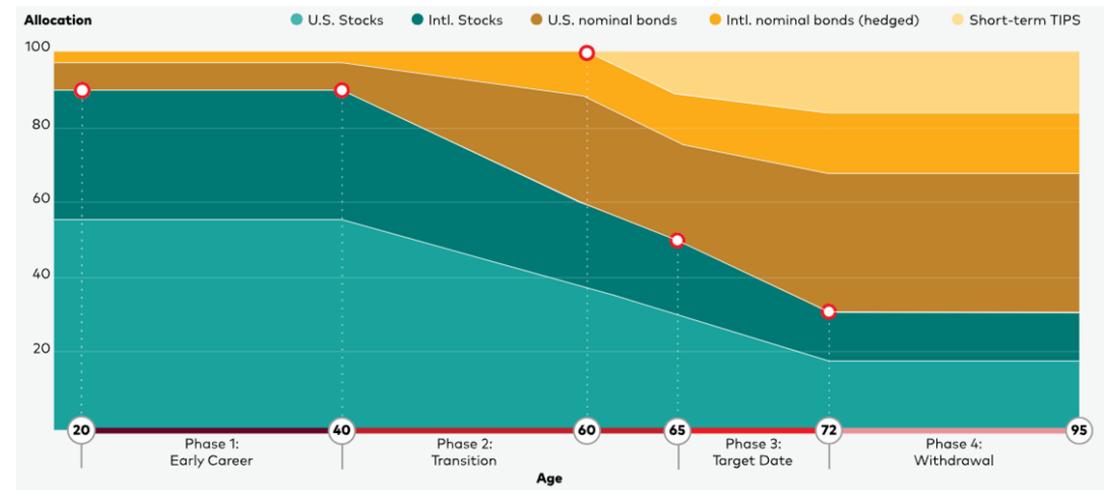
Would an 8× *real* multiple be bad?

- Assume \$100k/yr income
- Spend \$90k/yr while working
- *Real* 4% withdrawals = ~\$67k/yr
- If +10% employer match = ~\$73k/yr
- That's >80% of pre-retirement spend rate
- Social security likely adds more
- And, there was > \$1M legacy at end

How diversified is a target-date fund?

- ✓ Stocks – Market Risk
- ✓ Bonds – Term & Credit Risk
- ✓ Worldwide -- Geography

- ❑ Small?
- ❑ Value?
- ❑ Profitability?
- ❑ Investment?



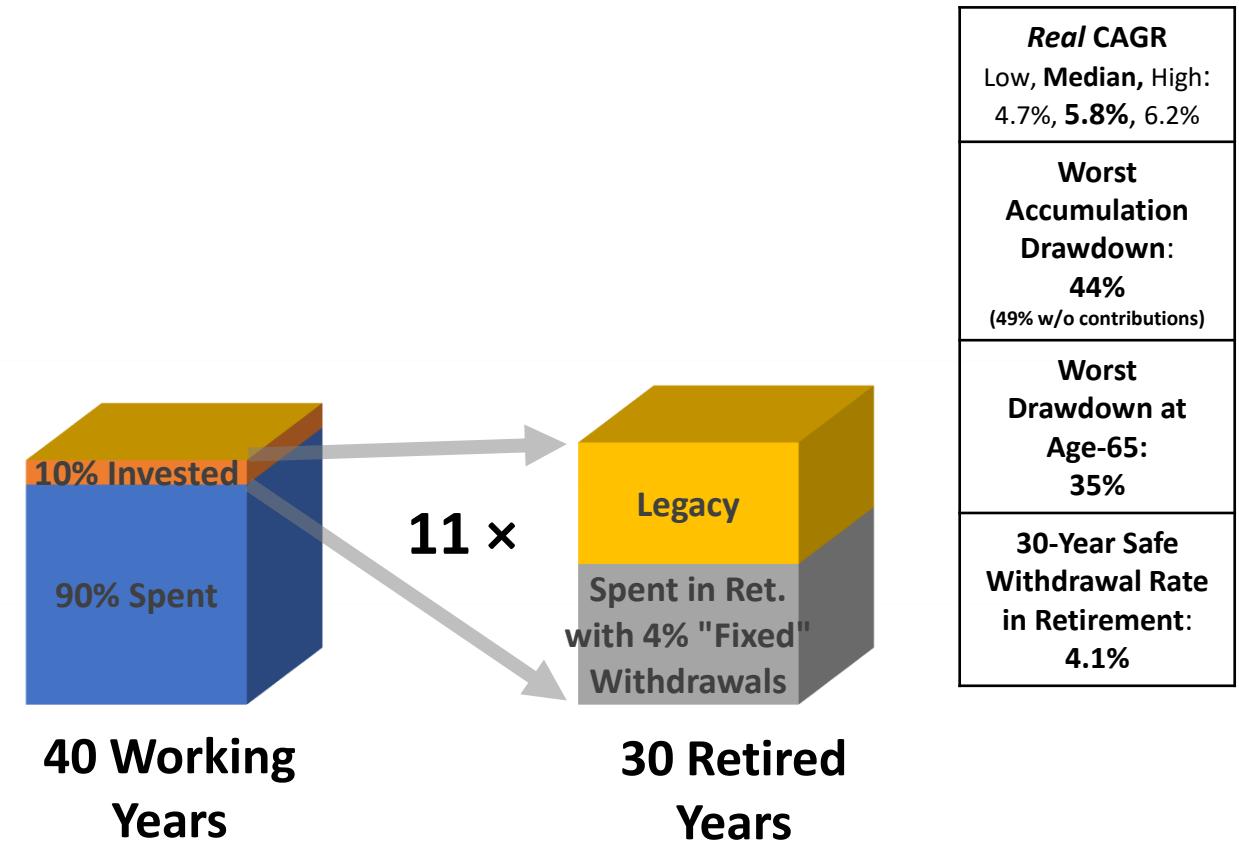
Easy 2 Funds for Life Strategy

- Put 90% of retirement savings in target-date fund
- Put 10% into US small-cap value fund
- No rebalancing
- Take 4% “fixed” annual retirement withdrawals from the fund that’s bigger than its target allocation to “nudge” rebalance over time.



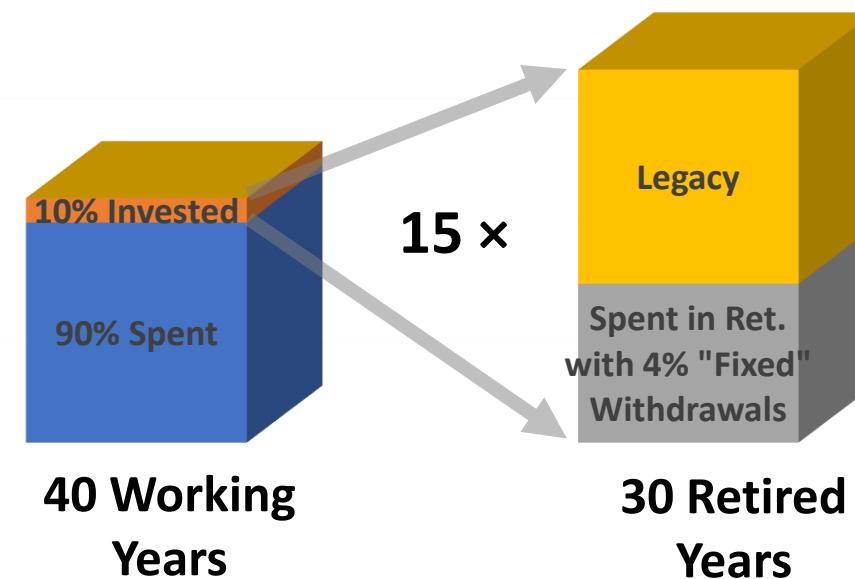
Easy 90/10 2 Funds for Life (*Real*)

- + More 1.3x TDF over lifetime
- + Volatility declines w/age
- + >4% safe withdrawal rate
- More volatile than TDF alone
- Doesn't track the market



Easy 80/20 2 Funds for Life (*Real*)

- + Almost 2× TDF over lifetime
- + Almost the 18× of the S&P 500
- + >4.5% safe withdrawal rate
- Higher volatility later
- Doesn't track the market

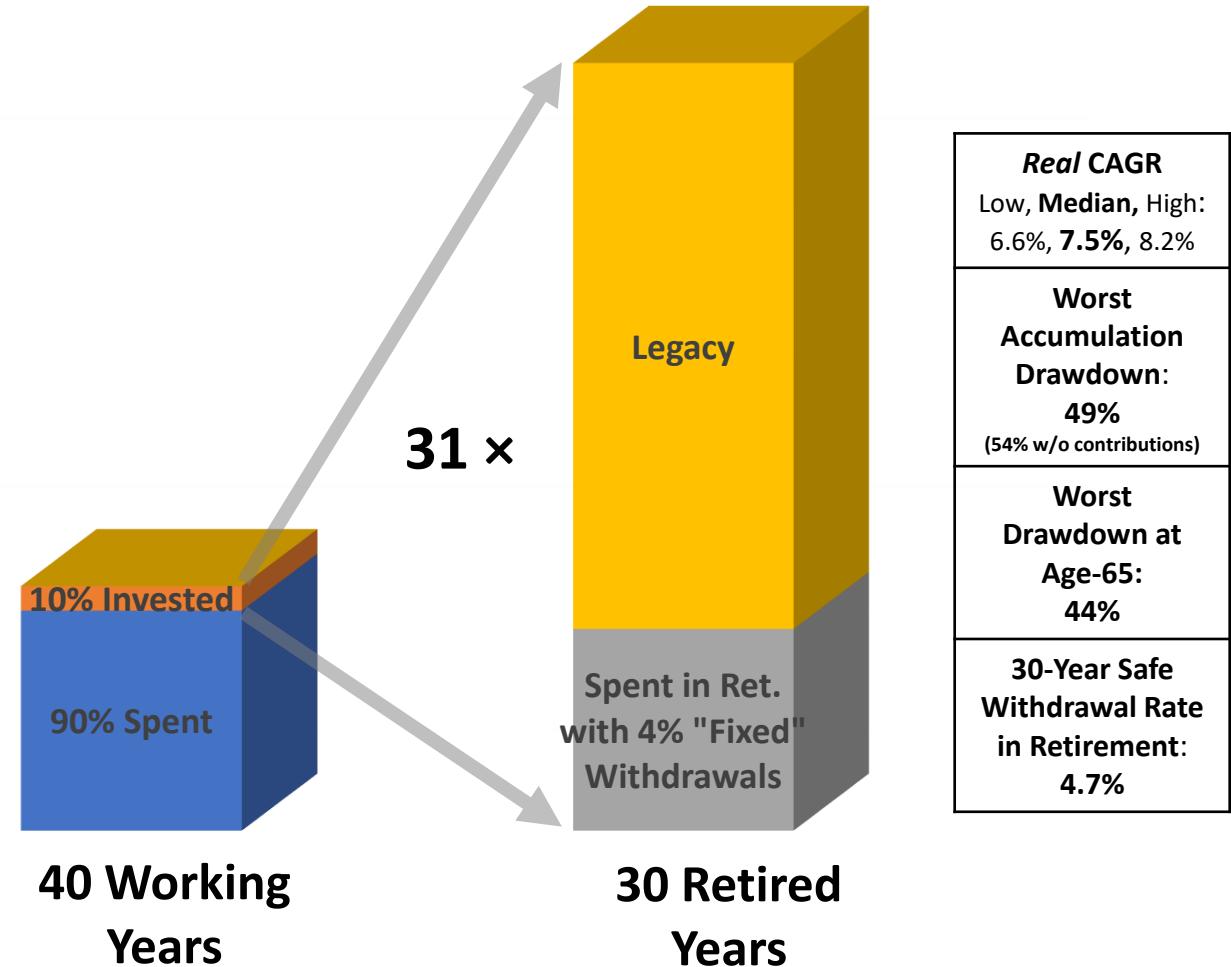


Real CAGR Low, Median, High: 5.3%, 6.3% , 6.9%
Worst Accumulation Drawdown: 47% (50% w/o contributions)
Worst Drawdown at Age-65: 42%
30-Year Safe Withdrawal Rate in Retirement: 4.6%

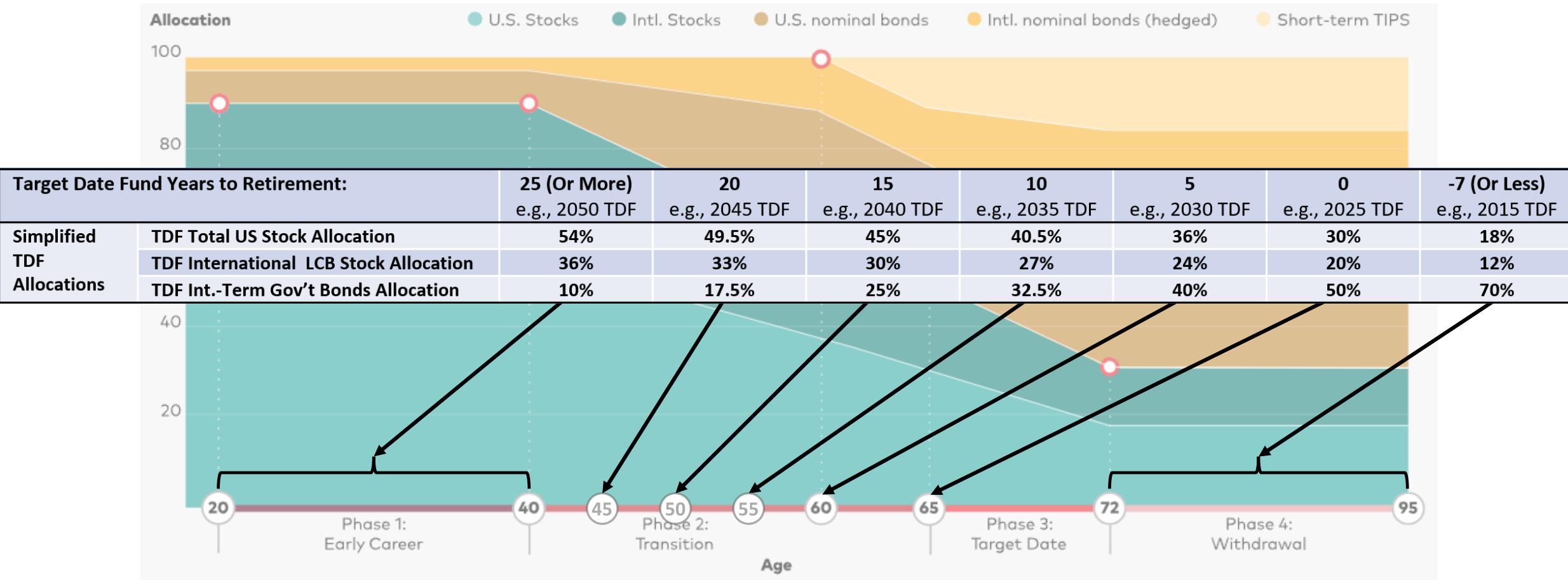
50/50 2 Funds for Life (*Real*)

Rebalanced Annually

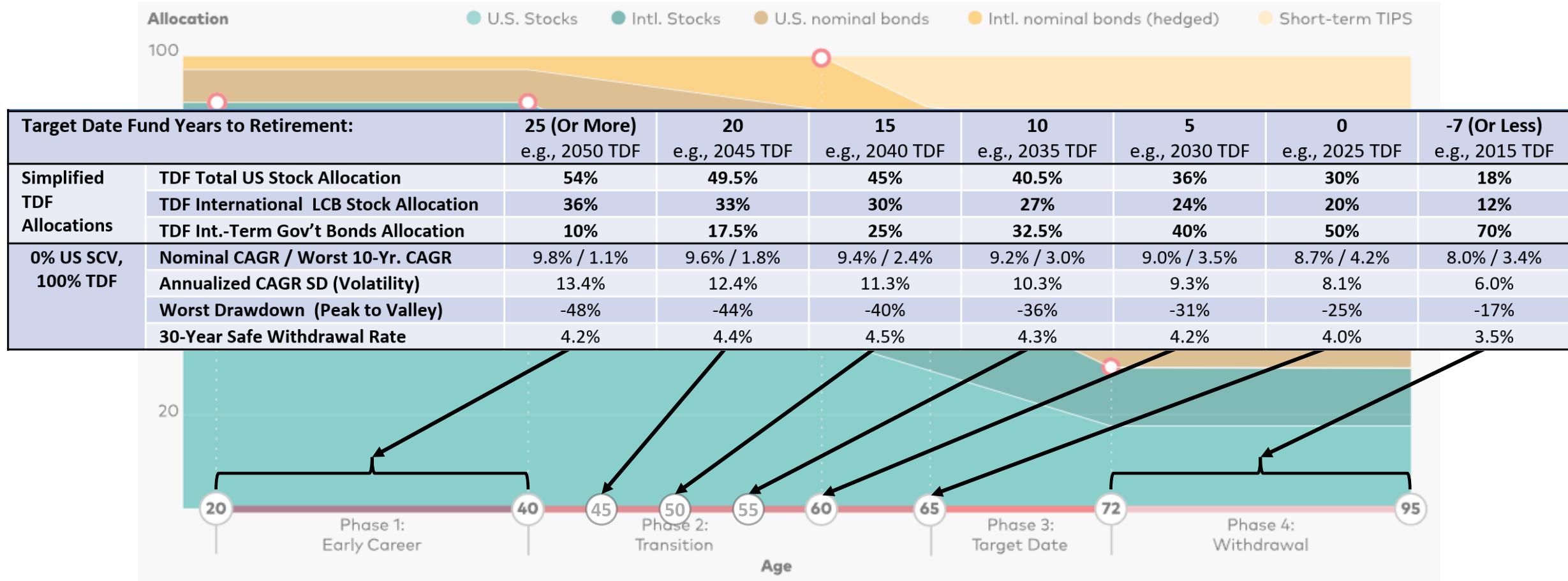
- + Almost 4x TDF over lifetime
- + Massively diversified
- + >4.5% safe withdrawal rate
- Higher volatility later
- Doesn't track the market



Target-Date Funds – Approximate Allocations

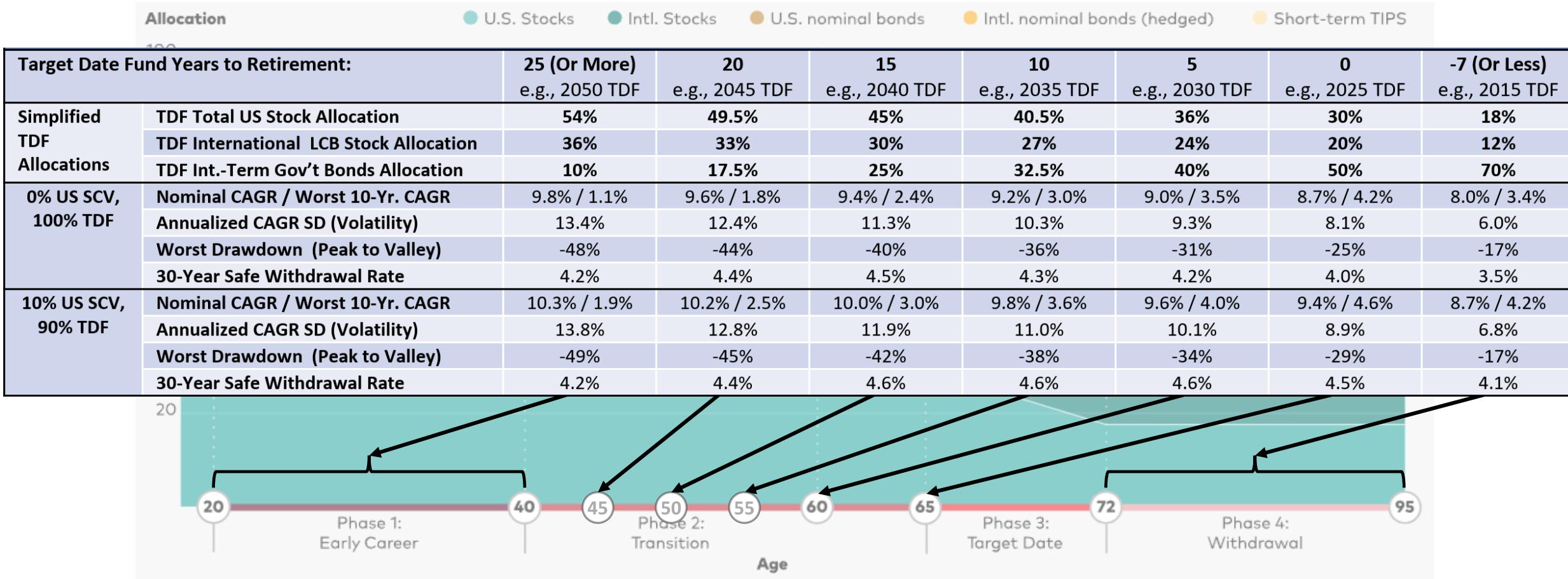


Historical TDF Lump Sum *Nominal* Results



Backtested with lump sum investment, annual rebalancing, and monthly start dates from Jan. 1970 through Dec. 2022 for CAGRs, SD & drawdowns. Safe-withdrawal rates tested back to Jan. 1928.

90|10 2 Fund for Life Lump Sum Nominal



80|20 2 Funds for Life Lump Sum Nominal

Allocation		U.S. Stocks	Intl. Stocks	U.S. nominal bonds	Intl. nominal bonds (hedged)	Short-term TIPS		
Target Date Fund Years to Retirement:		25 (Or More) e.g., 2050 TDF	20 e.g., 2045 TDF	15 e.g., 2040 TDF	10 e.g., 2035 TDF	5 e.g., 2030 TDF	0 e.g., 2025 TDF	-7 (Or Less) e.g., 2015 TDF
Simplified TDF Allocations	TDF Total US Stock Allocation	54%	49.5%	45%	40.5%	36%	30%	18%
	TDF International LCB Stock Allocation	36%	33%	30%	27%	24%	20%	12%
	TDF Int.-Term Gov't Bonds Allocation	10%	17.5%	25%	32.5%	40%	50%	70%
0% US SCV, 100% TDF	Nominal CAGR / Worst 10-Yr. CAGR	9.8% / 1.1%	9.6% / 1.8%	9.4% / 2.4%	9.2% / 3.0%	9.0% / 3.5%	8.7% / 4.2%	8.0% / 3.4%
	Annualized CAGR SD (Volatility)	13.4%	12.4%	11.3%	10.3%	9.3%	8.1%	6.0%
	Worst Drawdown (Peak to Valley)	-48%	-44%	-40%	-36%	-31%	-25%	-17%
	30-Year Safe Withdrawal Rate	4.2%	4.4%	4.5%	4.3%	4.2%	4.0%	3.5%
10% US SCV, 90% TDF	Nominal CAGR / Worst 10-Yr. CAGR	10.3% / 1.9%	10.2% / 2.5%	10.0% / 3.0%	9.8% / 3.6%	9.6% / 4.0%	9.4% / 4.6%	8.7% / 4.2%
	Annualized CAGR SD (Volatility)	13.8%	12.8%	11.9%	11.0%	10.1%	8.9%	6.8%
	Worst Drawdown (Peak to Valley)	-49%	-45%	-42%	-38%	-34%	-29%	-17%
	30-Year Safe Withdrawal Rate	4.2%	4.4%	4.6%	4.6%	4.6%	4.5%	4.1%
20% US SCV, 80% TDF	Nominal CAGR / Worst 10-Yr. CAGR	10.8% / 2.6%	10.7% / 3.1%	10.5% / 3.6%	10.4% / 4.1%	10.2% / 4.5%	10.0% / 5.1%	9.4% / 4.9%
	Annualized CAGR SD (Volatility)	14.3%	13.4%	12.6%	11.8%	10.9%	9.9%	7.9%
	Worst Drawdown (Peak to Valley)	-50%	-47%	-44%	-41%	-37%	-32%	-22%
	30-Year Safe Withdrawal Rate	4.1%	4.3%	4.5%	4.7%	4.7%	4.8%	4.6%
<p>Phase 1: Early Career Phase 2: Transition Phase 3: Target Date Phase 4: Withdrawal</p> <p>Age</p>								

Backtested with lump sum investment, annual rebalancing, and monthly start dates from Jan. 1970 through Dec. 2022 for CAGRs, SD & drawdowns. Safe-withdrawal rates tested back to Jan. 1928.

2 Funds for Life, Fixed Allocation, Lump Sum, Annually Rebalanced, Fine-Tuning Table

Target Date Fund Years to Retirement:		25 (Or More) e.g., 2050 TDF	20 e.g., 2045 TDF	15 e.g., 2040 TDF	10 e.g., 2035 TDF	5 e.g., 2030 TDF	0 e.g., 2025 TDF	-7 (Or Less) e.g., 2015 TDF
Simplified TDF Allocations	TDF Total US Stock Allocation	54%	49.5%	45%	40.5%	36%	30%	18%
	TDF International LCB Stock Allocation	36%	33%	30%	27%	24%	20%	12%
	TDF Int.-Term Gov't Bonds Allocation	10%	17.5%	25%	32.5%	40%	50%	70%
0% US SCV, 100% TDF	Nominal CAGR / Worst 10-Yr. CAGR	9.8% / 1.1%	9.6% / 1.8%	9.4% / 2.4%	9.2% / 3.0%	9.0% / 3.5%	8.7% / 4.2%	8.0% / 3.4%
	Annualized CAGR SD (Volatility)	13.4%	12.4%	11.3%	10.3%	9.3%	8.1%	6.0%
	Worst Drawdown (Peak to Valley)	-48%	-44%	-40%	-36%	-31%	-25%	-17%
	30-Year Safe Withdrawal Rate	4.2%	4.4%	4.5%	4.3%	4.2%	4.0%	3.5%
10% US SCV, 90% TDF	Nominal CAGR / Worst 10-Yr. CAGR	10.3% / 1.9%	10.2% / 2.5%	10.0% / 3.0%	9.8% / 3.6%	9.6% / 4.0%	9.4% / 4.6%	8.7% / 4.2%
	Annualized CAGR SD (Volatility)	13.8%	12.8%	11.9%	11.0%	10.1%	8.9%	6.8%
	Worst Drawdown (Peak to Valley)	-49%	-45%	-42%	-38%	-34%	-29%	-17%
	30-Year Safe Withdrawal Rate	4.2%	4.4%	4.6%	4.6%	4.6%	4.5%	4.1%
20% US SCV, 80% TDF	Nominal CAGR / Worst 10-Yr. CAGR	10.8% / 2.6%	10.7% / 3.1%	10.5% / 3.6%	10.4% / 4.1%	10.2% / 4.5%	10.0% / 5.1%	9.4% / 4.9%
	Annualized CAGR SD (Volatility)	14.3%	13.4%	12.6%	11.8%	10.9%	9.9%	7.9%
	Worst Drawdown (Peak to Valley)	-50%	-47%	-44%	-41%	-37%	-32%	-22%
	30-Year Safe Withdrawal Rate	4.1%	4.3%	4.5%	4.7%	4.7%	4.8%	4.6%
30% US SCV, 70% TDF	Nominal CAGR / Worst 10-Yr. CAGR	11.2% / 3.2%	11.1% / 3.7%	11.0% / 4.2%	10.9% / 4.6%	10.8% / 5.0%	10.6% / 5.5%	10.1% / 5.6%
	Annualized CAGR SD (Volatility)	14.8%	14.1%	13.4%	12.6%	11.9%	11.0%	9.3%
	Worst Drawdown (Peak to Valley)	-51%	-48%	-46%	-43%	-40%	-36%	-27%
	30-Year Safe Withdrawal Rate	4.0%	4.2%	4.3%	4.5%	4.7%	4.8%	4.8%
40% US SCV, 60% TDF	Nominal CAGR / Worst 10-Yr. CAGR	11.7% / 3.9%	11.6% / 4.3%	11.5% / 4.7%	11.4% / 5.1%	11.3% / 5.4%	11.1% / 5.8%	10.8% / 6.2%
	Annualized CAGR SD (Volatility)	15.5%	14.9%	14.2%	13.6%	13.0%	12.2%	10.7%
	Worst Drawdown (Peak to Valley)	-52%	-50%	-48%	-46%	-44%	-40%	-33%
	30-Year Safe Withdrawal Rate	3.8%	4.0%	4.1%	4.3%	4.4%	4.6%	4.9%
50% US SCV, 50% TDF	Nominal CAGR / Worst 10-Yr. CAGR	12.1% / 4.5%	12.0% / 4.9%	12.0% / 5.2%	11.9% / 5.5%	11.8% / 5.8%	11.7% / 6.2%	11.4% / 6.4%
	Annualized CAGR SD (Volatility)	16.2%	15.7%	15.2%	14.7%	14.2%	13.5%	12.3%
	Worst Drawdown (Peak to Valley)	-54%	-52%	-51%	-49%	-47%	-44%	-39%
	30-Year Safe Withdrawal Rate	3.6%	3.7%	3.9%	4.0%	4.1%	4.3%	4.7%
100% US SCV	Nominal CAGR / Worst-10Yr CAGR: 13.9% / 4.2% (-9.8% in 1928)			Annualized CAGR SD: 20.6%		Worst Drawdown: -61%		30-Year SWR: 2.5%

Sources & Assumptions: Assumes fixed asset class allocations, lumpsum investment, w/ annual rebalancing, for January 1970 through December 2022 returns. Safe withdrawal rates calculated with 1928-2022 annual returns.

US Stock allocation modeled with US total market returns. International stock allocation modeled with International Large Cap blend. Bond allocation modeled with US Intermediate-term Government bonds.

- Young investors who contribute regularly will likely see lower drawdowns while contributions are large relative to account balance.
 - Investors who rebalance less frequently will likely see higher returns and higher drawdowns.
 - Real returns (adjusted for inflation) were about 3-4% less than the nominal returns shown.
- Past performance doesn't guarantee future returns. Drawdowns from 1928-1970 were worse by an additional 10% to more than 30%.

2 Funds for Life, Fixed Allocation, Lump Sum, Annually Rebalanced, Fine-Tuning Table

Target Date Fund Years to Retirement:		25 (Or More) e.g., 2050 TDF	20 e.g., 2045 TDF	15 e.g., 2040 TDF	10 e.g., 2035 TDF	5 e.g., 2030 TDF	0 e.g., 2025 TDF	-7 (Or Less) e.g., 2015 TDF
Simplified TDF Allocations	TDF Total US Stock Allocation	54%	49.5%	45%	40.5%	36%	30%	18%
	TDF International LCB Stock Allocation	36%	33%	30%	27%	24%	20%	12%
	TDF Int.-Term Gov't Bonds Allocation	10%	17%	25%	22%	14%	50%	70%
0% US SCV, 100% TDF	Nominal CAGR / Worst 10-Yr. CAGR	9.8% / 1.1%	9.6% / 1.3%	9.1% / 1.4%	9.3% / 1.3%	9.1% / 1.3%	7.7% / 4.2%	8.0% / 3.4%
	Annualized CAGR SD (Volatility)	13.4%	12.4%	11.3%	10.3%	9.3%	8.1%	6.0%
	Worst Drawdown (Peak to Valley)	-48%	-44%	-40%	-36%	-31%	-25%	-17%
	30-Year Safe Withdrawal Rate	4.2%	4.4%	4.5%	4.3%	4.2%	4.0%	3.5%
10% US SCV, 90% TDF	Nominal CAGR / Worst 10-Yr. CAGR	10.3% / 1.9%	12.6% / 2.1%	11.0% / 2.0%	9.8% / 3.6%	9.6% / 4.0%	9.4% / 4.6%	8.7% / 4.2%
	Annualized CAGR SD (Volatility)	13.8%	11.8%	11.0%	11.0%	10.1%	8.9%	6.8%
	Worst Drawdown (Peak to Valley)	-49%	-45%	-42%	-38%	-34%	-29%	-17%
	30-Year Safe Withdrawal Rate	4.2%	4.4%	4.6%	4.6%	4.6%	4.5%	4.1%
20% US SCV, 80% TDF	Nominal CAGR / Worst 10-Yr. CAGR	10.8% / 2.6%	10.7% / 2.1%	10.1% / 3.6%	10.1% / 4.1%	9.2% / 4.5%	10.0% / 5.1%	9.4% / 4.9%
	Annualized CAGR SD (Volatility)	14.8%	13.4%	12.7%	11.8%	10.0%	9.9%	7.9%
	Worst Drawdown (Peak to Valley)	-50%	-47%	-44%	-41%	-37%	-32%	-22%
	30-Year Safe Withdrawal Rate	4.1%	4.3%	4.5%	4.7%	4.7%	4.8%	4.6%
30% US SCV, 70% TDF	Nominal CAGR / Worst 10-Yr. CAGR	11.2% / 3.2%	11.1% / 2.7%	11.0% / 2.2%	10.9% / 4.6%	10.8% / 5.0%	10.6% / 5.5%	10.1% / 5.6%
	Annualized CAGR SD (Volatility)	14.3%	11.6%	11.4%	12.6%	11.9%	11.0%	9.3%
	Worst Drawdown (Peak to Valley)	-55%	-49%	-47%	-47%	-40%	-36%	-27%
	30-Year Safe Withdrawal Rate	4.0%	4.2%	4.3%	4.5%	4.7%	4.8%	4.8%
40% US SCV, 60% TDF	Nominal CAGR / Worst 10-Yr. CAGR	11.7% / 3.9%	11.6% / 4.3%	11.5% / 4.7%	11.4% / 5.1%	11.3% / 5.4%	11.1% / 5.8%	10.8% / 6.2%
	Annualized CAGR SD (Volatility)	15.6%	14.9%	14.2%	13.6%	13.0%	12.2%	10.7%
	Worst Drawdown (Peak to Valley)	-52%	-40%	-38%	-39%	-44%	-40%	-33%
	30-Year Safe Withdrawal Rate	3.8%	4.0%	4.1%	4.5%	4.4%	4.6%	4.9%
50% US SCV, 50% TDF	Nominal CAGR / Worst 10-Yr. CAGR	12.1% / 4.5%	12.0% / 4.9%	12.0% / 5.2%	11.9% / 5.5%	11.8% / 5.8%	11.7% / 6.2%	11.4% / 6.4%
	Annualized CAGR SD (Volatility)	16.2%	15.7%	15.2%	14.7%	14.2%	13.5%	12.3%
	Worst Drawdown (Peak to Valley)	-49%	-52%	-51%	-47%	-44%	-39%	-39%
	30-Year Safe Withdrawal Rate	3.6%	3.3%	3.3%	4.0%	4.1%	4.3%	4.7%
100% US SCV	Nominal CAGR / Worst-10Yr CAGR: 13.9% / 4.2% (-9.8% in 1928)	Annualized CAGR SD: 20.6%		Worst Drawdown: -61%		30-Year SWR: 2.5%		

Sources & Assumptions: Assumes fixed asset class allocations, lumpsum investment, w/ annual rebalancing, for January 1970 through December 2022 returns. Safe withdrawal rates calculated with 1928-2022 annual returns.

US Stock allocation modeled with US total market returns. International stock allocation modeled with International Large Cap blend. Bond allocation modeled with US Intermediate-term Government bonds.

- Young investors who contribute regularly will likely see lower drawdowns while contributions are large relative to account balance.
 - Investors who rebalance less frequently will likely see higher returns and higher drawdowns.
 - Real returns (adjusted for inflation) were about 3-4% less than the nominal returns shown.
- Past performance doesn't guarantee future returns. Drawdowns from 1928-1970 were worse by an additional 10% to more than 30%.

2 Funds for Life, Fixed Allocation, Lump Sum, Annually Rebalanced, Fine-Tuning Table

Target Date Fund Years to Retirement:		25 (Or More) e.g., 2050 TDF	20 e.g., 2045 TDF	15 e.g., 2040 TDF	10 e.g., 2035 TDF	5 e.g., 2030 TDF	0 e.g., 2025 TDF	-7 (Or Less) e.g., 2015 TDF
Simplified TDF Allocations	TDF Total US Stock Allocation	54%	49.5%	45%	40.5%	36%	30%	18%
	TDF International LCB Stock Allocation	36%	33%	30%	27%	24%	20%	12%
	TDF Int.-Term Gov't Bonds Allocation	10%	17.5%	25%	32.5%	40%	50%	70%
0% US SCV, 100% TDF	Nominal CAGR / Worst 10-Yr. CAGR	9.8% / 1.1%	9.6% / 1.8%	9.4% / 2.4%	9.2% / 3.0%	9.0% / 3.5%	8.7% / 4.2%	8.0% / 3.4%
	Annualized CAGR SD (Volatility)	13.4%	12.4%	11.2%	10.8%	9.9%	8.1%	6.0%
	Worst Drawdown (Peak to Valley)	-41%	-44%	-40%	-33%	-33%	-29%	-17%
	30-Year Safe Withdrawal Rate	4.2%	4.4%	4.5%	4.5%	4.2%	4.0%	3.5%
10% US SCV, 90% TDF	Nominal CAGR / Worst 10-Yr. CAGR	10.3% / 1.9%	10.2% / 2.5%	10.0% / 3.0%	9.8% / 3.6%	9.6% / 4.0%	9.4% / 4.6%	8.7% / 4.2%
	Annualized CAGR SD (Volatility)	13.8%	12.8%	11.9%	11.0%	10.1%	8.9%	6.8%
	Worst Drawdown (Peak to Valley)	-37%	-41%	-36%	-34%	-34%	-29%	-17%
	30-Year Safe Withdrawal Rate	4.0%	4.6%	4.6%	4.6%	4.5%	4.5%	4.1%
20% US SCV, 80% TDF	Nominal CAGR / Worst 10-Yr. CAGR	10.5% / 2.6%	10.7% / 3.1%	10.5% / 3.6%	10.4% / 4.1%	10.2% / 4.5%	10.0% / 5.1%	9.4% / 4.9%
	Annualized CAGR SD (Volatility)	14.3%	13.4%	12.6%	11.8%	10.9%	9.9%	7.9%
	Worst Drawdown (Peak to Valley)	-50%	-47%	-44%	-41%	-37%	-32%	-22%
	30-Year Safe Withdrawal Rate	4.0%	4.2%	4.2%	4.5%	4.7%	4.8%	4.6%
30% US SCV, 70% TDF	Nominal CAGR / Worst 10-Yr. CAGR	11.1% / 3.2%	11.5% / 3.7%	11.3% / 4.2%	11.5% / 4.5%	11.8% / 4.8%	11.6% / 5.5%	10.1% / 5.6%
	Annualized CAGR SD (Volatility)	14.8%	14.1%	13.4%	12.6%	11.9%	11.0%	9.3%
	Worst Drawdown (Peak to Valley)	-51%	-48%	-46%	-43%	-40%	-36%	-27%
	30-Year Safe Withdrawal Rate	4.0%	4.2%	4.2%	4.5%	4.7%	4.8%	4.8%
40% US SCV, 60% TDF	Nominal CAGR / Worst 10-Yr. CAGR	11.1% / 3.9%	11.6% / 4.1%	11.1% / 4.1%	11.4% / 5.1%	11.1% / 5.4%	11.1% / 5.8%	10.8% / 6.2%
	Annualized CAGR SD (Volatility)	15.5%	14.9%	14.2%	13.6%	13.0%	12.2%	10.7%
	Worst Drawdown (Peak to Valley)	-52%	-50%	-48%	-46%	-44%	-40%	-33%
	30-Year Safe Withdrawal Rate	3.9%	4.0%	4.1%	4.3%	4.4%	4.6%	4.9%
50% US SCV, 50% TDF	Nominal CAGR / Worst 10-Yr. CAGR	12.1% / 5.0%	12.0% / 4.1%	11.0% / 4.1%	11.9% / 5.3%	11.7% / 5.8%	11.7% / 6.2%	11.4% / 6.4%
	Annualized CAGR SD (Volatility)	16.2%	15.5%	15.2%	14.7%	14.2%	13.5%	12.3%
	Worst Drawdown (Peak to Valley)	-54%	-52%	-51%	-49%	-47%	-44%	-39%
	30-Year Safe Withdrawal Rate	3.6%	3.7%	3.9%	4.0%	4.1%	4.3%	4.7%
100% US SCV	Nominal CAGR / Worst-10Yr CAGR: 13.9% / 4.2% (-9.8% in 1928)		Annualized CAGR SD: 20.6%		Worst Drawdown: -61%		30-Year SWR: 2.5%	

Sources & Assumptions: Assumes fixed asset class allocations, lumpsum investment, w/ annual rebalancing, for January 1970 through December 2022 returns. Safe withdrawal rates calculated with 1928-2022 annual returns.

US Stock allocation modeled with US total market returns. International stock allocation modeled with International Large Cap blend. Bond allocation modeled with US Intermediate-term Government bonds.

- Young investors who contribute regularly will likely see lower drawdowns while contributions are large relative to account balance.
 - Investors who rebalance less frequently will likely see higher returns and higher drawdowns.
 - Real returns (adjusted for inflation) were about 3-4% less than the nominal returns shown.
- Past performance doesn't guarantee future returns. Drawdowns from 1928-1970 were worse by an additional 10% to more than 30%.

2 Funds for Life, Fixed Allocation, Lump Sum, Annually Rebalanced, Fine-Tuning Table – ASSET ALLOCATIONS

Target Date Fund Years to Retirement:		25 (Or More) e.g., 2050 TDF	20 e.g., 2045 TDF	15 e.g., 2040 TDF	10 e.g., 2035 TDF	5 e.g., 2030 TDF	0 e.g., 2025 TDF	-7 (Or Less) e.g., 2015 TDF
Simplified TDF Allocations	TDF Total US Stock Allocation	54%	49.5%	45%	40.5%	36%	30%	18%
	TDF International LCB Stock Allocation	36%	33%	30%	27%	24%	20%	12%
	TDF Int.-Term Gov't Bonds Allocation	10%	17.5%	25%	32.5%	40%	50%	70%
0% US SCV, 100% TDF	Total US Stock Allocation	54%	49.5%	45%	40.5%	36%	30%	18%
	International LCB Stock Allocation	36%	33%	30%	27%	24%	20%	12%
	Int.-Term Gov't Bonds Allocation	10%	17.5%	25%	32.5%	40%	50%	70%
	US Small-Cap Value	--	--	--	--	--	--	--
10% US SCV, 90% TDF	Total US Stock Allocation	48.6%	44.6%	50%	36.5%	40%	27%	16.2%
	International LCB Stock Allocation	32.4%	29.7%	27%	24.3%	21.6%	18%	10.8%
	Int.-Term Gov't Bonds Allocation	9%	15.8%	22.5%	29.3%	36%	45%	63%
	US Small-Cap Value	10%	10%	10%	10%	10%	10%	10%
20% US SCV, 80% TDF	Total US Stock Allocation	43.2%	39.6%	36%	32.4%	28.8%	24%	14.4%
	International LCB Stock Allocation	28.8%	26.4%	24%	21.6%	19.2%	16%	9.6%
	Int.-Term Gov't Bonds Allocation	8%	14%	20%	26%	32%	40%	56%
	US Small-Cap Value	20%	20%	20%	20%	20%	20%	20%
30% US SCV, 70% TDF	Total US Stock Allocation	37.8%	34.7%	31.5%	28.4%	25.2%	21%	12.6%
	International LCB Stock Allocation	25.2%	23.1%	21%	18.9%	16.8%	14%	8.4%
	Int.-Term Gov't Bonds Allocation	7%	12.3%	17.5%	22.8%	28%	35%	49%
	US Small-Cap Value	30%	30%	30%	30%	30%	30%	30%
40% US SCV, 60% TDF	Total US Stock Allocation	32.4%	29.7%	27%	24.3%	21.6%	18%	10.8%
	International LCB Stock Allocation	21.6%	19.8%	18%	16.2%	14.4%	12%	7.2%
	Int.-Term Gov't Bonds Allocation	6%	10.5%	15%	19.5%	24%	30%	42%
	US Small-Cap Value	40%	40%	40%	40%	40%	40%	40%
50% US SCV, 50% TDF	Total US Stock Allocation	27%	24.8%	22.5%	20.3%	18%	15%	9%
	International LCB Stock Allocation	18%	16.5%	15%	13.5%	12%	10%	6%
	Int.-Term Gov't Bonds Allocation	5%	8.8%	12.5%	16.3%	20%	25%	35%
	US Small-Cap Value	50%	50%	50%	50%	50%	50%	50%
100% US SCV	Nominal CAGR / Worst-10Yr CAGR: 13.9% / 4.2% (-9.8% in 1928)			Annualized CAGR SD: 20.6%		Worst Drawdown: -61%		30-Year SWR: 2.5%

Sources & Assumptions: Assumes fixed asset class allocations, lumpsum investment, w/ annual rebalancing, for January 1970 through December 2022 returns. Safe withdrawal rates calculated with 1928-2022 annual returns.

US Stock allocation modeled with US total market returns. International stock allocation modeled with International Large Cap blend. Bond allocation modeled with US Intermediate-term Government bonds.

- Young investors who contribute regularly will likely see lower drawdowns while contributions are large relative to account balance.
 - Investors who rebalance less frequently will likely see higher returns and higher drawdowns.
 - Real returns (adjusted for inflation) were about 3-4% less than the nominal returns shown.
- Past performance doesn't guarantee future returns. Drawdowns from 1928-1970 were worse by an additional 10% to more than 30%.

2 Funds for Life, Fixed Allocation, Lump Sum, Annually Rebalanced, Fine-Tuning Table

Target Date Fund Years to Retirement:		25 (Or More) e.g., 2050 TDF	20 e.g., 2045 TDF	15 e.g., 2040 TDF	10 e.g., 2035 TDF	5 e.g., 2030 TDF	0 e.g., 2025 TDF	-7 (Or Less) e.g., 2015 TDF
Simplified TDF Allocations	TDF Total US Stock Allocation	54%	49.5%	45%	40.5%	36%	30%	18%
	TDF International LCB Stock Allocation	36%	33%	30%	27%	24%	20%	12%
	TDF Int.-Term Gov't Bonds Allocation	10%	17.5%	25%	32.5%	40%	50%	70%
0% US SCV, 100% TDF	Nominal CAGR / Worst 10-Yr. CAGR	9.8% / 1.1%	9.6% / 1.8%	9.4% / 2.4%	9.2% / 3.0%	9.0% / 3.5%	8.7% / 4.2%	8.0% / 3.4%
	Annualized CAGR SD (Volatility)	13.4%	12.4%	11.3%	10.3%	9.3%	8.1%	6.0%
	Worst Drawdown (Peak to Valley)	-48%	-44%	-40%	-36%	-31%	-25%	-17%
	30-Year Safe Withdrawal Rate	4.2%	4.4%	4.5%	4.3%	4.2%	4.0%	3.5%
10% US SCV, 90% TDF	Nominal CAGR / Worst 10-Yr. CAGR	10.3% / 1.9%	10.2% / 2.5%	10.0% / 3.0%	9.8% / 3.6%	9.6% / 4.0%	9.4% / 4.6%	8.7% / 4.2%
	Annualized CAGR SD (Volatility)	13.8%	12.8%	11.9%	11.0%	10.1%	8.9%	6.8%
	Worst Drawdown (Peak to Valley)	-49%	-45%	-42%	-38%	-34%	-29%	-17%
	30-Year Safe Withdrawal Rate	4.2%	4.4%	4.6%	4.6%	4.6%	4.5%	4.1%
20% US SCV, 80% TDF	Nominal CAGR / Worst 10-Yr. CAGR	10.8% / 2.6%	10.7% / 3.1%	10.5% / 3.6%	10.4% / 4.1%	10.2% / 4.5%	10.0% / 5.1%	9.4% / 4.9%
	Annualized CAGR SD (Volatility)	14.3%	13.4%	12.6%	11.8%	10.9%	9.9%	7.9%
	Worst Drawdown (Peak to Valley)	-50%	-47%	-44%	-41%	-37%	-32%	-22%
	30-Year Safe Withdrawal Rate	4.1%	4.3%	4.5%	4.7%	4.7%	4.8%	4.6%
30% US SCV, 70% TDF	Nominal CAGR / Worst 10-Yr. CAGR	11.2% / 3.2%	11.1% / 3.7%	11.0% / 4.2%	10.9% / 4.6%	10.8% / 5.0%	10.6% / 5.5%	10.1% / 5.6%
	Annualized CAGR SD (Volatility)	14.8%	14.1%	13.4%	12.6%	11.9%	11.0%	9.3%
	Worst Drawdown (Peak to Valley)	-51%	-48%	-46%	-43%	-40%	-36%	-27%
	30-Year Safe Withdrawal Rate	4.0%	4.2%	4.3%	4.5%	4.7%	4.8%	4.8%
40% US SCV, 60% TDF	Nominal CAGR / Worst 10-Yr. CAGR	11.7% / 3.9%	11.6% / 4.3%	11.5% / 4.7%	11.4% / 5.1%	11.3% / 5.4%	11.1% / 5.8%	10.8% / 6.2%
	Annualized CAGR SD (Volatility)	15.5%	14.9%	14.2%	13.6%	13.0%	12.2%	10.7%
	Worst Drawdown (Peak to Valley)	-52%	-50%	-48%	-46%	-44%	-40%	-33%
	30-Year Safe Withdrawal Rate	3.8%	4.0%	4.1%	4.3%	4.4%	4.6%	4.9%
50% US SCV, 50% TDF	Nominal CAGR / Worst 10-Yr. CAGR	12.1% / 4.5%	12.0% / 4.9%	12.0% / 5.2%	11.9% / 5.5%	11.8% / 5.8%	11.7% / 6.2%	11.4% / 6.4%
	Annualized CAGR SD (Volatility)	16.2%	15.7%	15.2%	14.7%	14.2%	13.5%	12.3%
	Worst Drawdown (Peak to Valley)	-54%	-52%	-51%	-49%	-47%	-44%	-39%
	30-Year Safe Withdrawal Rate	3.6%	3.7%	3.9%	4.0%	4.1%	4.3%	4.7%
100% US SCV	Nominal CAGR / Worst-10Yr CAGR: 13.9% / 4.2% (-9.8% in 1928)			Annualized CAGR SD: 20.6%		Worst Drawdown: -61%		30-Year SWR: 2.5%

Sources & Assumptions: Assumes fixed asset class allocations, lumpsum investment, w/ annual rebalancing, for January 1970 through December 2022 returns. Safe withdrawal rates calculated with 1928-2022 annual returns.

US Stock allocation modeled with US total market returns. International stock allocation modeled with International Large Cap blend. Bond allocation modeled with US Intermediate-term Government bonds.

- Young investors who contribute regularly will likely see lower drawdowns while contributions are large relative to account balance.
 - Investors who rebalance less frequently will likely see higher returns and higher drawdowns.
 - Real returns (adjusted for inflation) were about 3-4% less than the nominal returns shown.
- Past performance doesn't guarantee future returns. Drawdowns from 1928-1970 were worse by an additional 10% to more than 30%.

2 Funds for Life, Fixed Allocation, Lump Sum, Annually Rebalanced, Fine-Tuning Table																
Target Date Fund Years to Retirement:		25 (Or More) e.g., 2050 TDF	20 e.g., 2045 TDF	15 e.g., 2040 TDF	10 e.g., 2035 TDF	5 e.g., 2030 TDF	0 e.g., 2025 TDF	-7 (Or Less) e.g., 2015 TDF								
Simplified TDF Allocations	TDF Total US Stock Allocation	54%	49.5%	45%	40.5%	36%	30%	18%								
	TDF International LCB Stock Allocation	36%	33%	30%	27%	24%	20%	12%								
	TDF Int.-Term Gov't Bonds Allocation	10%	17.5%	25%	32.5%	40%	50%	70%								
0% US SCV, 100% TDF	Nominal CAGR / Worst 10-Yr. CAGR	9.8% / 1.1%	9.6% / 1.8%	9.4% / 2.4%	9.2% / 3.0%	9.0% / 3.5%	8.7% / 4.2%	8.0% / 3.4%								
	Annualized CAGR SD (Volatility)	13.4%	12.4%	11.3%	10.3%	9.3%	8.1%	6.0%								
	Worst Drawdown (Peak to Valley)	-48%	-44%	-40%	-36%	-31%	-25%	-17%								
	30-Year Safe Withdrawal Rate	4.2%	4.4%	4.5%	4.3%	4.2%	4.0%	3.5%								
10% US SCV, 90% TDF	Nominal CAGR / Worst 10-Yr. CAGR	10.3% / 1.9%	10.2% / 2.5%	10.0% / 3.0%	9.8% / 3.6%	9.6% / 4.0%	9.4% / 4.6%	8.7% / 4.2%								
	Annualized CAGR SD (Volatility)	13.8%	12.8%	11.9%	11.0%	10.1%	8.9%	6.8%								
	Worst Drawdown (Peak to Valley)	-49%	-45%	-42%	-38%	-34%	-29%	-17%								
	30-Year Safe Withdrawal Rate	4.2%	4.4%	4.6%	4.6%	4.6%	4.5%	4.1%								
20% US SCV, 80% TDF	Nominal CAGR / Worst 10-Yr. CAGR	10.8% / 2.6%	10.7% / 3.1%	10.5% / 3.6%	10.4% / 4.1%	10.2% / 4.5%	10.0% / 5.1%	9.4% / 4.9%								
	Annualized CAGR SD (Volatility)	14.3%	13.4%	12.6%	11.8%	10.9%	9.9%	7.9%								
	Worst Drawdown (Peak to Valley)	-50%	-47%	-44%	-41%	-37%	-32%	-22%								
	30-Year Safe Withdrawal Rate	4.1%	4.3%	4.5%	4.7%	4.7%	4.8%	4.6%								
30% US SCV, 70% TDF	Nominal CAGR / Worst 10-Yr. CAGR	11.2% / 3.2%	11.1% / 3.7%	11.0% / 4.2%	10.9% / 4.6%	10.8% / 5.0%	10.6% / 5.5%	10.1% / 5.6%								
	Annualized CAGR SD (Volatility)	14.8%	14.1%	13.4%	12.6%	11.9%	11.0%	9.3%								
	Worst Drawdown (Peak to Valley)	-51%	-48%	-46%	-43%	-40%	-36%	-27%								
	30-Year Safe Withdrawal Rate	4.0%	4.2%	4.3%	4.5%	4.7%	4.8%	4.8%								
40% US SCV, 60% TDF	Nominal CAGR / Worst 10-Yr. CAGR	11.7% / 3.9%	11.6% / 4.3%	11.5% / 4.7%	11.4% / 5.1%	11.3% / 5.4%	11.1% / 5.8%	10.8% / 6.2%								
	Annualized CAGR SD (Volatility)	15.5%	14.9%	14.2%	13.6%	13.0%	12.2%	10.7%								
	Worst Drawdown (Peak to Valley)	-52%	-50%	-48%	-46%	-44%	-40%	-33%								
	30-Year Safe Withdrawal Rate	3.8%	4.0%	4.1%	4.3%	4.4%	4.6%	4.9%								
50% US SCV, 50% TDF	Nominal CAGR / Worst 10-Yr. CAGR	12.1% / 4.5%	12.0% / 4.9%	12.0% / 5.2%	11.9% / 5.5%	11.8% / 5.8%	11.7% / 6.2%	11.4% / 6.4%								
	Annualized CAGR SD (Volatility)	16.2%	15.7%	15.2%	14.7%	14.2%	13.5%	12.3%								
	Worst Drawdown (Peak to Valley)	-54%	-52%	-51%	-49%	-47%	-44%	-39%								
	30-Year Safe Withdrawal Rate	3.6%	3.7%	3.9%	4.0%	4.1%	4.3%	4.7%								
100% US SCV	Nominal CAGR / Worst-10Yr CAGR: 13.9% / 4.2% (-9.8% in 1928)		Annualized CAGR SD: 20.6%		Worst Drawdown: -61%		30-Year SWR: 2.5%									
Sources & Assumptions: Assumes fixed asset class allocations, lumpsum investment, w/ annual rebalancing, for January 1970 through December 2022 returns. Safe withdrawal rates calculated with 1928-2022 annual returns. US Stock allocation modeled with US total market returns. International stock allocation modeled with International Large Cap blend. Bond allocation modeled with US Intermediate-term Government bonds.																
<ul style="list-style-type: none"> Young investors who contribute regularly will likely see lower drawdowns while contributions are large relative to account balance. <ul style="list-style-type: none"> Investors who rebalance less frequently will likely see higher returns and higher drawdowns. Real returns (adjusted for inflation) were about 3-4% less than the nominal returns shown. Past performance doesn't guarantee future returns. Drawdowns from 1928-1970 were worse by an additional 10% to more than 30%. 																

≥ 11%
CAGR

2 Funds for Life, Fixed Allocation, Lump Sum, Annually Rebalanced, Fine-Tuning Table													
Target Date Fund Years to Retirement:		25 (Or More) e.g., 2050 TDF	20 e.g., 2045 TDF	15 e.g., 2040 TDF	10 e.g., 2035 TDF	5 e.g., 2030 TDF	0 e.g., 2025 TDF	-7 (Or Less) e.g., 2015 TDF					
Simplified TDF Allocations	TDF Total US Stock Allocation	54%	49.5%	45%	40.5%	36%	30%	18%					
	TDF International LCB Stock Allocation	36%	33%	30%	27%	24%	20%	12%					
	TDF Int.-Term Gov't Bonds Allocation	10%	17.5%	25%	32.5%	40%	50%	70%					
0% US SCV, 100% TDF	Nominal CAGR / Worst 10-Yr. CAGR	9.8% / 1.1%	9.6% / 1.8%	9.4% / 2.4%	9.2% / 3.0%	9.0% / 3.5%	8.7% / 4.2%	8.0% / 3.4%					
	Annualized CAGR SD (Volatility)	13.4%	12.4%	11.3%	10.3%	9.3%	8.1%	6.0%					
	Worst Drawdown (Peak to Valley)	-48%	-44%	-40%	-36%	-31%	-25%	-17%					
	30-Year Safe Withdrawal Rate	4.2%	4.4%	4.5%	4.3%	4.2%	4.0%	3.5%					
10% US SCV, 90% TDF	Nominal CAGR / Worst 10-Yr. CAGR	10.3% / 1.9%	10.2% / 2.5%	10.0% / 3.0%	9.8% / 3.6%	9.6% / 4.0%	9.4% / 4.6%	8.7% / 4.2%					
	Annualized CAGR SD (Volatility)	13.8%	12.8%	11.9%	11.0%	10.1%	8.9%	6.8%					
	Worst Drawdown (Peak to Valley)	-49%	-45%	-42%	-38%	-34%	-29%	-17%					
	30-Year Safe Withdrawal Rate	4.2%	4.4%	4.6%	4.6%	4.6%	4.5%	4.1%					
20% US SCV, 80% TDF	Nominal CAGR / Worst 10-Yr. CAGR	10.8% / 2.6%	10.7% / 3.1%	10.5% / 3.6%	10.4% / 4.1%	10.2% / 4.5%	10.0% / 5.1%	9.4% / 4.9%					
	Annualized CAGR SD (Volatility)	14.3%	13.4%	12.6%	11.8%	10.9%	9.9%	7.9%					
	Worst Drawdown (Peak to Valley)	-50%	-47%	-44%	-41%	-37%	-32%	-22%					
	30-Year Safe Withdrawal Rate	4.1%	4.3%	4.5%	4.7%	4.7%	4.8%	4.6%					
30% US SCV, 70% TDF	Nominal CAGR / Worst 10-Yr. CAGR	11.2% / 3.2%	11.1% / 3.7%	11.0% / 4.2%	10.9% / 4.6%	10.8% / 5.0%	10.6% / 5.5%	10.1% / 5.6%					
	Annualized CAGR SD (Volatility)	14.8%	14.1%	13.4%	12.6%	11.9%	11.0%	9.3%					
	Worst Drawdown (Peak to Valley)	-51%	-48%	-46%	-43%	-40%	-36%	-27%					
	30-Year Safe Withdrawal Rate	4.0%	4.2%	4.3%	4.5%	4.7%	4.8%	4.8%					
40% US SCV, 60% TDF	Nominal CAGR / Worst 10-Yr. CAGR	11.7% / 3.9%	11.6% / 4.3%	11.5% / 4.7%	11.4% / 5.1%	11.3% / 5.4%	11.1% / 5.8%	10.8% / 6.2%					
	Annualized CAGR SD (Volatility)	15.5%	14.9%	14.2%	13.6%	13.0%	12.2%	10.7%					
	Worst Drawdown (Peak to Valley)	-52%	-50%	-48%	-46%	-44%	-40%	-33%					
	30-Year Safe Withdrawal Rate	3.8%	4.0%	4.1%	4.3%	4.4%	4.6%	4.9%					
50% US SCV, 50% TDF	Nominal CAGR / Worst 10-Yr. CAGR	12.1% / 4.5%	12.0% / 4.9%	12.0% / 5.2%	11.9% / 5.5%	11.8% / 5.8%	11.7% / 6.2%	11.4% / 6.4%					
	Annualized CAGR SD (Volatility)	16.2%	15.7%	15.2%	14.7%	14.2%	13.5%	12.3%					
	Worst Drawdown (Peak to Valley)	-54%	-52%	-51%	-49%	-47%	-44%	-39%					
	30-Year Safe Withdrawal Rate	3.6%	3.7%	3.9%	4.0%	4.1%	4.3%	4.7%					
100% US SCV	Nominal CAGR / Worst-10Yr CAGR: 13.9% / 4.2% (-9.8% in 1928)		Annualized CAGR SD: 20.6%		Worst Drawdown: -61%		30-Year SWR: 2.5%						
Sources & Assumptions: Assumes fixed asset class allocations, lumpsum investment, w/ annual rebalancing, for January 1970 through December 2022 returns. Safe withdrawal rates calculated with 1928-2022 annual returns. US Stock allocation modeled with US total market returns. International stock allocation modeled with International Large Cap blend. Bond allocation modeled with US Intermediate-term Government bonds.													
<ul style="list-style-type: none"> Young investors who contribute regularly will likely see lower drawdowns while contributions are large relative to account balance. <ul style="list-style-type: none"> Investors who rebalance less frequently will likely see higher returns and higher drawdowns. Real returns (adjusted for inflation) were about 3-4% less than the nominal returns shown. Past performance doesn't guarantee future returns. Drawdowns from 1928-1970 were worse by an additional 10% to more than 30%. 													

Less
Than
40%
Peak
To
Trough
Loss

2 Funds for Life, Fixed Allocation, Lump Sum, Annually Rebalanced, Fine-Tuning Table													
Target Date Fund Years to Retirement:		25 (Or More) e.g., 2050 TDF	20 e.g., 2045 TDF	15 e.g., 2040 TDF	10 e.g., 2035 TDF	5 e.g., 2030 TDF	0 e.g., 2025 TDF	-7 (Or Less) e.g., 2015 TDF					
Simplified TDF Allocations	TDF Total US Stock Allocation	54%	49.5%	45%	40.5%	36%	30%	18%					
	TDF International LCB Stock Allocation	36%	33%	30%	27%	24%	20%	12%					
	TDF Int.-Term Gov't Bonds Allocation	10%	17.5%	25%	32.5%	40%	50%	70%					
0% US SCV, 100% TDF	Nominal CAGR / Worst 10-Yr. CAGR	9.8% / 1.1%	9.6% / 1.8%	9.4% / 2.4%	9.2% / 3.0%	9.0% / 3.5%	8.7% / 4.2%	8.0% / 3.4%					
	Annualized CAGR SD (Volatility)	13.4%	12.4%	11.3%	10.3%	9.3%	8.1%	6.0%					
	Worst Drawdown (Peak to Valley)	-48%	-44%	-40%	-36%	-31%	-25%	-17%					
	30-Year Safe Withdrawal Rate	4.2%	4.4%	4.5%	4.3%	4.2%	4.0%	3.5%					
10% US SCV, 90% TDF	Nominal CAGR / Worst 10-Yr. CAGR	10.3% / 1.9%	10.2% / 2.5%	10.0% / 3.0%	9.8% / 3.6%	9.6% / 4.0%	9.4% / 4.6%	8.7% / 4.2%					
	Annualized CAGR SD (Volatility)	13.8%	12.8%	11.9%	11.0%	10.1%	8.9%	6.8%					
	Worst Drawdown (Peak to Valley)	-49%	-45%	-42%	-38%	-34%	-29%	-17%					
	30-Year Safe Withdrawal Rate	4.2%	4.4%	4.6%	4.6%	4.6%	4.5%	4.1%					
20% US SCV, 80% TDF	Nominal CAGR / Worst 10-Yr. CAGR	10.8% / 2.6%	10.7% / 3.1%	10.5% / 3.6%	10.4% / 4.1%	10.2% / 4.5%	10.0% / 5.1%	9.4% / 4.9%					
	Annualized CAGR SD (Volatility)	14.3%	13.4%	12.6%	11.8%	10.9%	9.9%	7.9%					
	Worst Drawdown (Peak to Valley)	-50%	-47%	-44%	-41%	-37%	-32%	-22%					
	30-Year Safe Withdrawal Rate	4.1%	4.3%	4.5%	4.7%	4.7%	4.8%	4.6%					
30% US SCV, 70% TDF	Nominal CAGR / Worst 10-Yr. CAGR	11.2% / 3.2%	11.1% / 3.7%	11.0% / 4.2%	10.9% / 4.6%	10.8% / 5.0%	10.6% / 5.5%	10.1% / 5.6%					
	Annualized CAGR SD (Volatility)	14.8%	14.1%	13.4%	12.6%	11.9%	11.0%	9.3%					
	Worst Drawdown (Peak to Valley)	-51%	-48%	-46%	-43%	-40%	-36%	-27%					
	30-Year Safe Withdrawal Rate	4.0%	4.2%	4.3%	4.5%	4.7%	4.8%	4.8%					
40% US SCV, 60% TDF	Nominal CAGR / Worst 10-Yr. CAGR	11.7% / 3.9%	11.6% / 4.3%	11.5% / 4.7%	11.4% / 5.1%	11.3% / 5.4%	11.1% / 5.8%	10.8% / 6.2%					
	Annualized CAGR SD (Volatility)	15.5%	14.9%	14.2%	13.6%	13.0%	12.2%	10.7%					
	Worst Drawdown (Peak to Valley)	-52%	-50%	-48%	-46%	-44%	-40%	-33%					
	30-Year Safe Withdrawal Rate	3.8%	4.0%	4.1%	4.3%	4.4%	4.6%	4.9%					
50% US SCV, 50% TDF	Nominal CAGR / Worst 10-Yr. CAGR	12.1% / 4.5%	12.0% / 4.9%	12.0% / 5.2%	11.9% / 5.5%	11.8% / 5.8%	11.7% / 6.2%	11.4% / 6.4%					
	Annualized CAGR SD (Volatility)	16.2%	15.7%	15.2%	14.7%	14.2%	13.5%	12.3%					
	Worst Drawdown (Peak to Valley)	-54%	-52%	-51%	-49%	-47%	-44%	-39%					
	30-Year Safe Withdrawal Rate	3.6%	3.7%	3.9%	4.0%	4.1%	4.3%	4.7%					
100% US SCV	Nominal CAGR / Worst-10Yr CAGR: 13.9% / 4.2% (-9.8% in 1928)		Annualized CAGR SD: 20.6%		Worst Drawdown: -61%		30-Year SWR: 2.5%						
Sources & Assumptions: Assumes fixed asset class allocations, lumpsum investment, w/ annual rebalancing, for January 1970 through December 2022 returns. Safe withdrawal rates calculated with 1928-2022 annual returns. US Stock allocation modeled with US total market returns. International stock allocation modeled with International Large Cap blend. Bond allocation modeled with US Intermediate-term Government bonds.													
<ul style="list-style-type: none"> Young investors who contribute regularly will likely see lower drawdowns while contributions are large relative to account balance. Investors who rebalance less frequently will likely see higher returns and higher drawdowns. Real returns (adjusted for inflation) were about 3-4% less than the nominal returns shown. Past performance doesn't guarantee future returns. Drawdowns from 1928-1970 were worse by an additional 10% to more than 30%. 													

≥ 4.4%
SWR

2 Funds for Life, Fixed Allocation, Lump Sum, Annually Rebalanced, Fine-Tuning Table													
Target Date Fund Years to Retirement:		25 (Or More) e.g., 2050 TDF	20 e.g., 2045 TDF	15 e.g., 2040 TDF	10 e.g., 2035 TDF	5 e.g., 2030 TDF	0 e.g., 2025 TDF	-7 (Or Less) e.g., 2015 TDF					
Simplified TDF Allocations	TDF Total US Stock Allocation	54%	49.5%	45%	40.5%	36%	30%	18%					
	TDF International LCB Stock Allocation	36%	33%	30%	27%	24%	20%	12%					
	TDF Int.-Term Gov't Bonds Allocation	10%	17.5%	25%	32.5%	40%	50%	70%					
0% US SCV, 100% TDF	Nominal CAGR / Worst 10-Yr. CAGR	9.8% / 1.1%	9.6% / 1.8%	9.4% / 2.4%	9.2% / 3.0%	9.0% / 3.5%	8.7% / 4.2%	8.0% / 3.4%					
	Annualized CAGR SD (Volatility)	13.4%	12.4%	11.3%	10.3%	9.3%	8.1%	6.0%					
	Worst Drawdown (Peak to Valley)	-48%	-44%	-40%	-36%	-31%	-25%	-17%					
	30-Year Safe Withdrawal Rate	4.2%	4.4%	4.5%	4.3%	4.2%	4.0%	3.5%					
10% US SCV, 90% TDF	Nominal CAGR / Worst 10-Yr. CAGR	10.3% / 1.9%	10.2% / 2.5%	10.0% / 3.0%	9.8% / 3.6%	9.6% / 4.0%	9.4% / 4.6%	8.7% / 4.2%					
	Annualized CAGR SD (Volatility)	13.8%	12.8%	11.9%	11.0%	10.1%	8.9%	6.8%					
	Worst Drawdown (Peak to Valley)	-49%	-45%	-42%	-38%	-34%	-29%	-17%					
	30-Year Safe Withdrawal Rate	4.2%	4.4%	4.6%	4.6%	4.6%	4.5%	4.1%					
20% US SCV, 80% TDF	Nominal CAGR / Worst 10-Yr. CAGR	10.8% / 2.6%	10.7% / 3.1%	10.5% / 3.6%	10.4% / 4.1%	10.2% / 4.5%	10.0% / 5.1%	9.4% / 4.9%					
	Annualized CAGR SD (Volatility)	14.3%	13.4%	12.6%	11.8%	10.9%	9.9%	7.9%					
	Worst Drawdown (Peak to Valley)	-50%	-47%	-44%	-41%	-37%	-32%	-22%					
	30-Year Safe Withdrawal Rate	4.1%	4.3%	4.5%	4.7%	4.7%	4.8%	4.6%					
30% US SCV, 70% TDF	Nominal CAGR / Worst 10-Yr. CAGR	11.2% / 3.2%	11.1% / 3.7%	11.0% / 4.2%	10.9% / 4.6%	10.8% / 5.0%	10.6% / 5.5%	10.1% / 5.6%					
	Annualized CAGR SD (Volatility)	14.8%	14.1%	13.4%	12.6%	11.9%	11.0%	9.3%					
	Worst Drawdown (Peak to Valley)	-51%	-48%	-46%	-43%	-40%	-36%	-27%					
	30-Year Safe Withdrawal Rate	4.0%	4.2%	4.3%	4.5%	4.7%	4.8%	4.8%					
40% US SCV, 60% TDF	Nominal CAGR / Worst 10-Yr. CAGR	11.7% / 3.9%	11.6% / 4.3%	11.5% / 4.7%	11.4% / 5.1%	11.3% / 5.4%	11.1% / 5.8%	10.8% / 6.2%					
	Annualized CAGR SD (Volatility)	15.5%	14.9%	14.2%	13.6%	13.0%	12.2%	10.7%					
	Worst Drawdown (Peak to Valley)	-52%	-50%	-48%	-46%	-44%	-40%	-33%					
	30-Year Safe Withdrawal Rate	3.8%	4.0%	4.1%	4.3%	4.4%	4.6%	4.9%					
50% US SCV, 50% TDF	Nominal CAGR / Worst 10-Yr. CAGR	12.1% / 4.5%	12.0% / 4.9%	12.0% / 5.2%	11.9% / 5.5%	11.8% / 5.8%	11.7% / 6.2%	11.4% / 6.4%					
	Annualized CAGR SD (Volatility)	16.2%	15.7%	15.2%	14.7%	14.2%	13.5%	12.3%					
	Worst Drawdown (Peak to Valley)	-54%	-52%	-51%	-49%	-47%	-44%	-39%					
	30-Year Safe Withdrawal Rate	3.6%	3.7%	3.9%	4.0%	4.1%	4.3%	4.7%					
100% US SCV	Nominal CAGR / Worst-10Yr CAGR: 13.9% / 4.2% (-9.8% in 1928)		Annualized CAGR SD: 20.6%		Worst Drawdown: -61%		30-Year SWR: 2.5%						
Sources & Assumptions: Assumes fixed asset class allocations, lumpsum investment, w/ annual rebalancing, for January 1970 through December 2022 returns. Safe withdrawal rates calculated with 1928-2022 annual returns. US Stock allocation modeled with US total market returns. International stock allocation modeled with International Large Cap blend. Bond allocation modeled with US Intermediate-term Government bonds.													
<ul style="list-style-type: none"> Young investors who contribute regularly will likely see lower drawdowns while contributions are large relative to account balance. Investors who rebalance less frequently will likely see higher returns and higher drawdowns. Real returns (adjusted for inflation) were about 3-4% less than the nominal returns shown. Past performance doesn't guarantee future returns. Drawdowns from 1928-1970 were worse by an additional 10% to more than 30%. 													

≥ 11%
CAGR

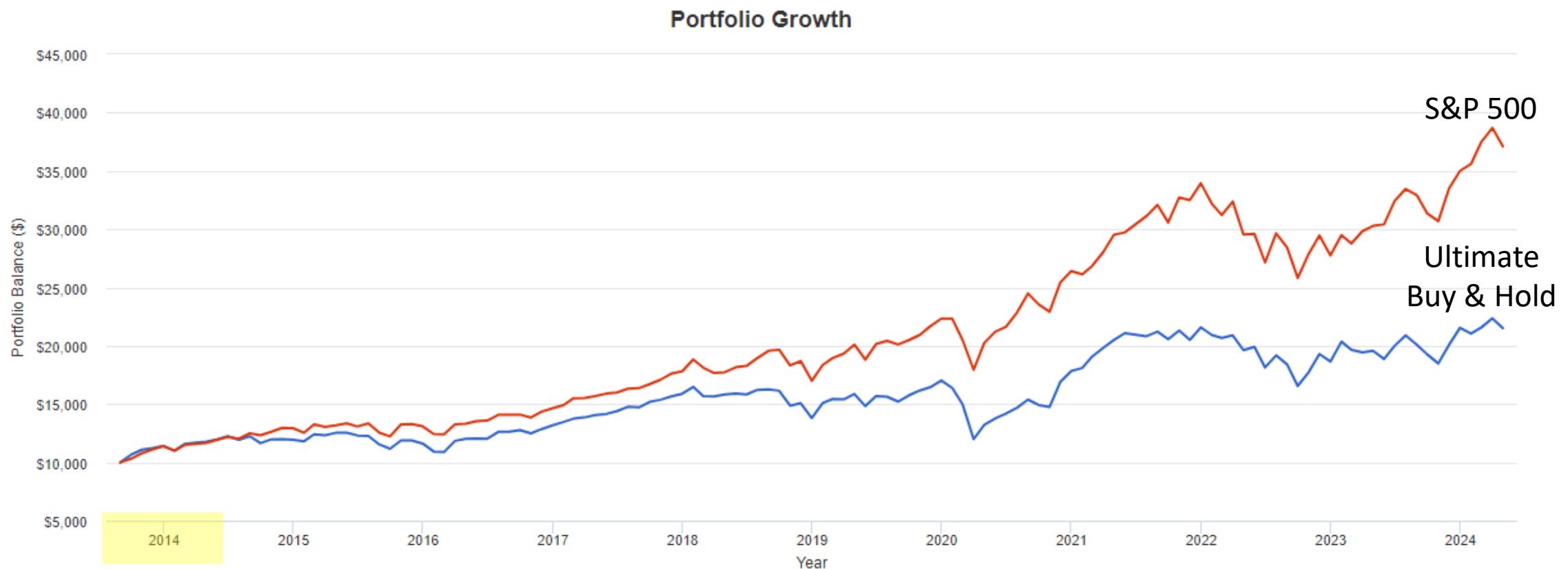
&

< 40%
Worst
DD

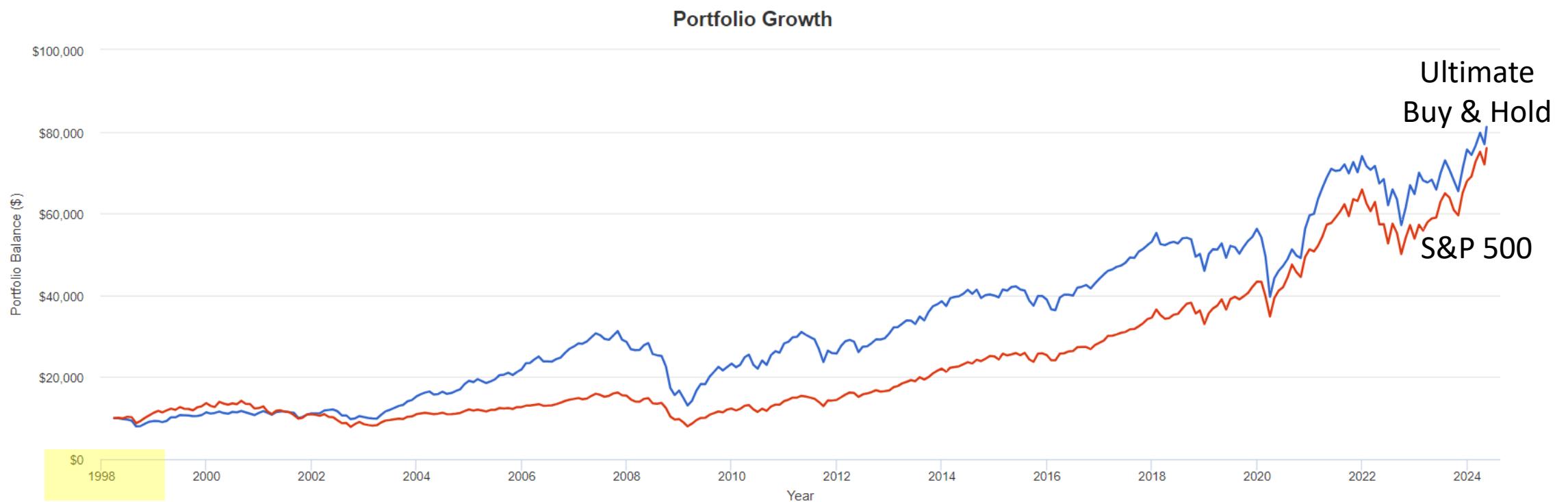
&

≥ 4.4%
SWR

Sounds easy – why doesn't everyone do it?



Sounds easy – why doesn't everyone do it?



Backtested with lump sum investment, annual rebalancing, and selection of DFA and Vanguard funds that go back to April, 1998.



What kind of investor are you?

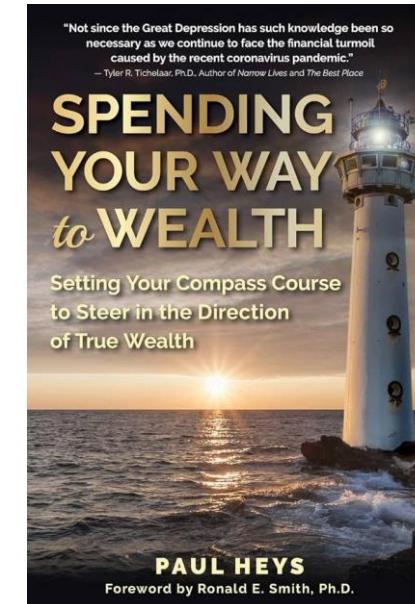
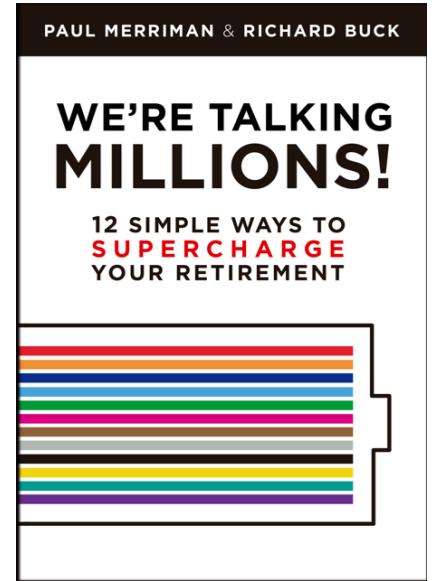
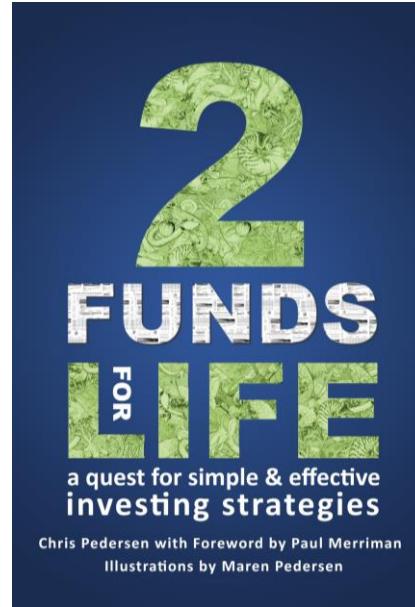
Summary

- Diversification can
 - Increase return-per-unit-of-risk
 - Minimize risk for needed returns
 - Increase safe withdrawal rates
 - Protect against geographic risks
 - Reduce uncertainty of results
- Impatience can undo it all
- Zoom out & keep learning!



To learn more

- www.paulmerriman.com for books, articles, fund recommendations, videos, podcasts and more.
- ***Sign up*** for the free newsletter to get a download link for ***We're Talking Millions*** and ***2 Funds for Life***
- ***Read Spending Your Way to Wealth***



Disclaimer

- Everything in this presentation is provided for informational and entertainment purposes only and is not intended to substitute for obtaining professional financial advice. Nothing contained here, on the www.paulmerriman website, or in books, articles, podcasts, videos and other means of communication by Paul A. Merriman or those associated with The Merriman Financial Education Foundation implies a consulting or coaching relationship. Please consult a licensed financial or legal professional for advice on your own situation.

Any Questions?

(for more Iceland eye candy: bit.ly/44xp0Uw)
(for more Eclipse eye candy: bit.ly/3QL2rqm)

Chris Pedersen

The Merriman Financial Education
Foundation

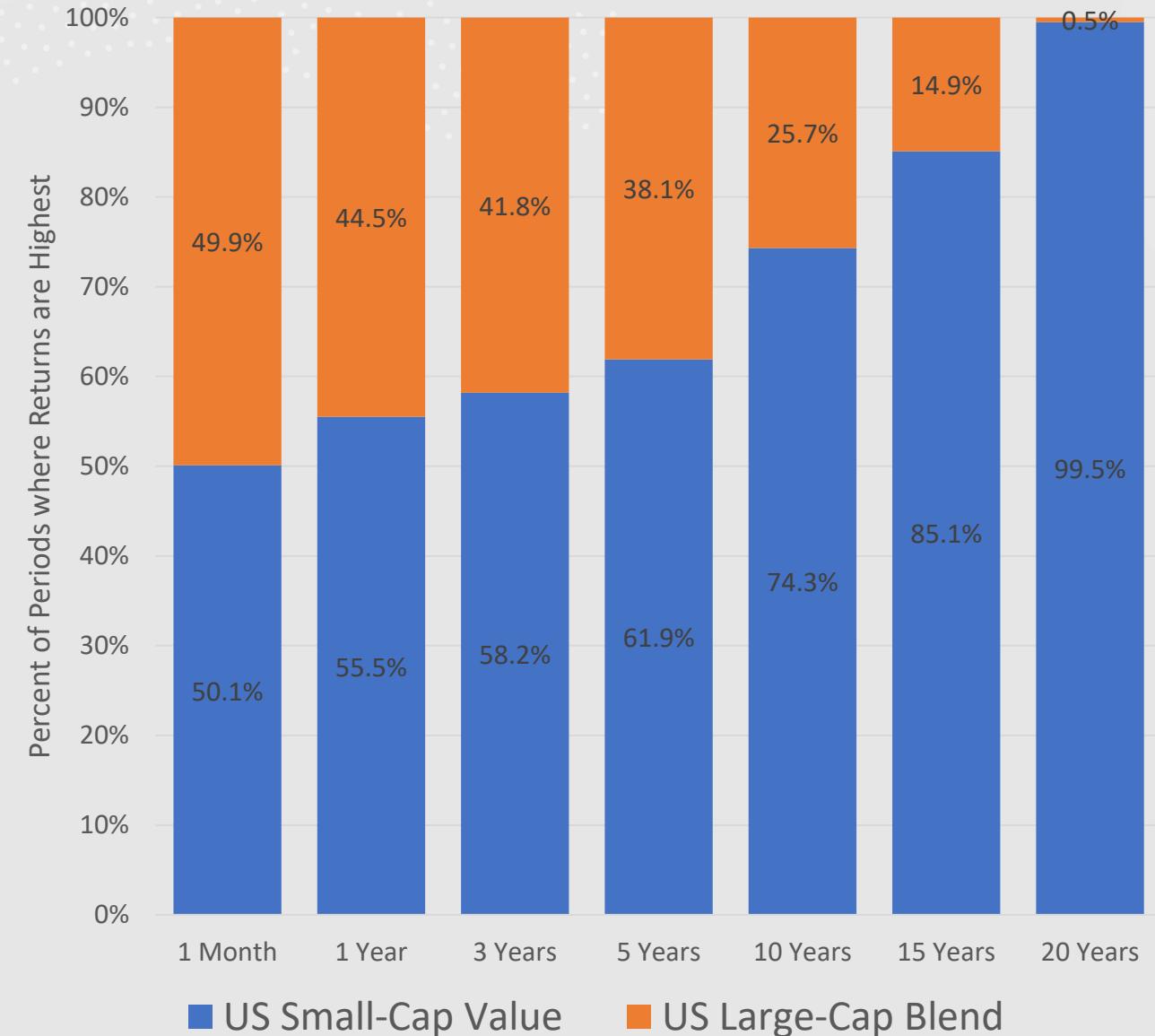
May 18, 2024



Backup

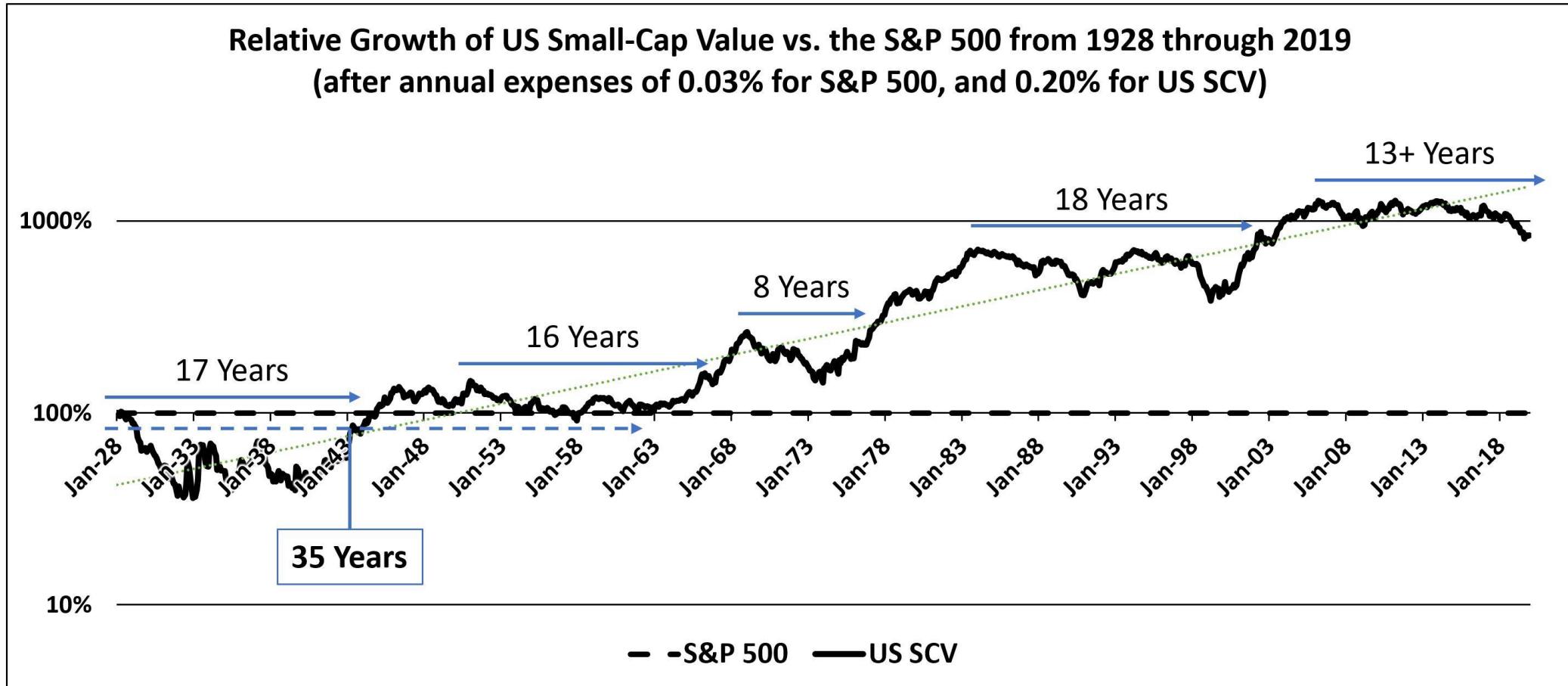
Why not go all-in on Small-Cap Value?

Historical Probability of Outperformance versus
Holding Periods

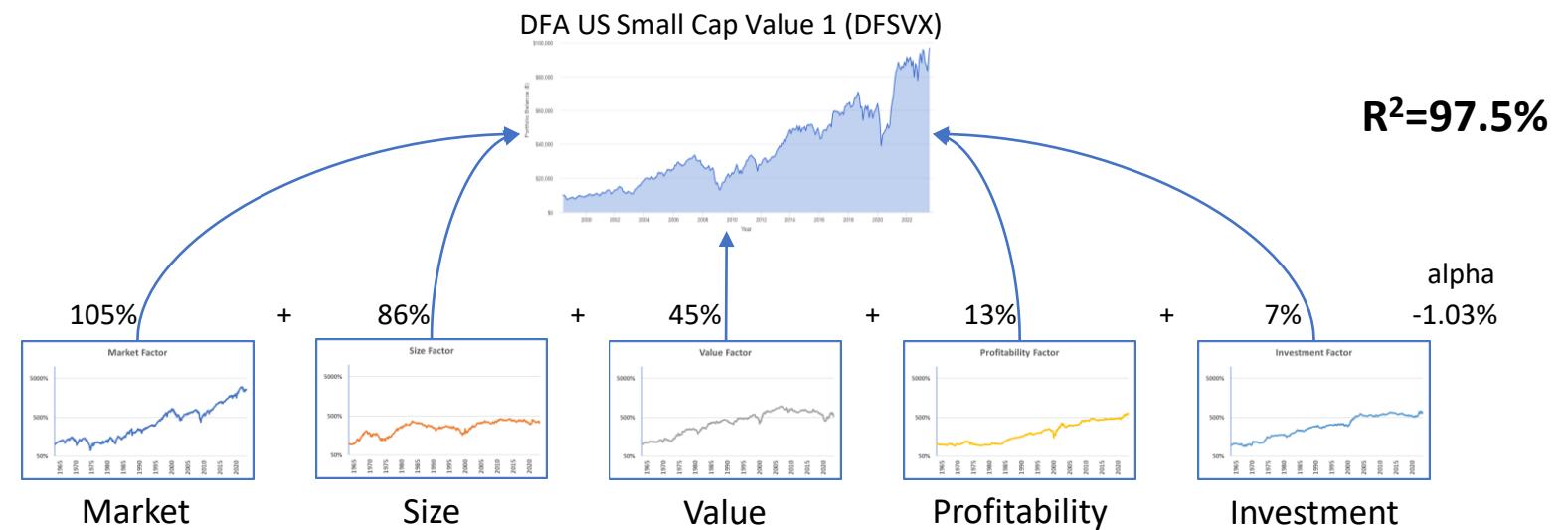


Source: IFA.com Index Comparison Chart (1/1/1928 – 6/30/2023), rounded to one decimal point

Why not go all-in on Small-Cap Value?

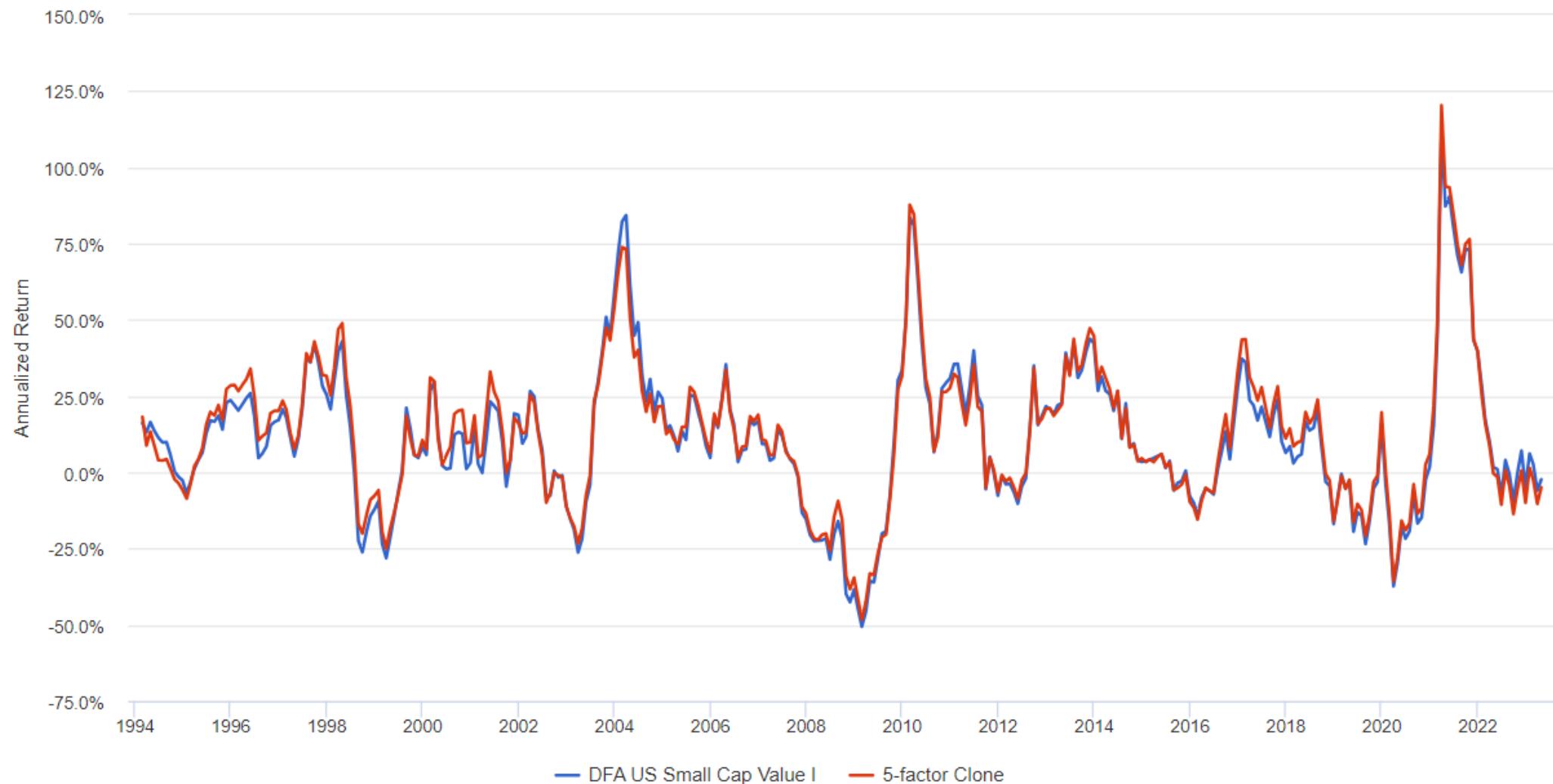


Factor models
can explain
>95% of return
variations

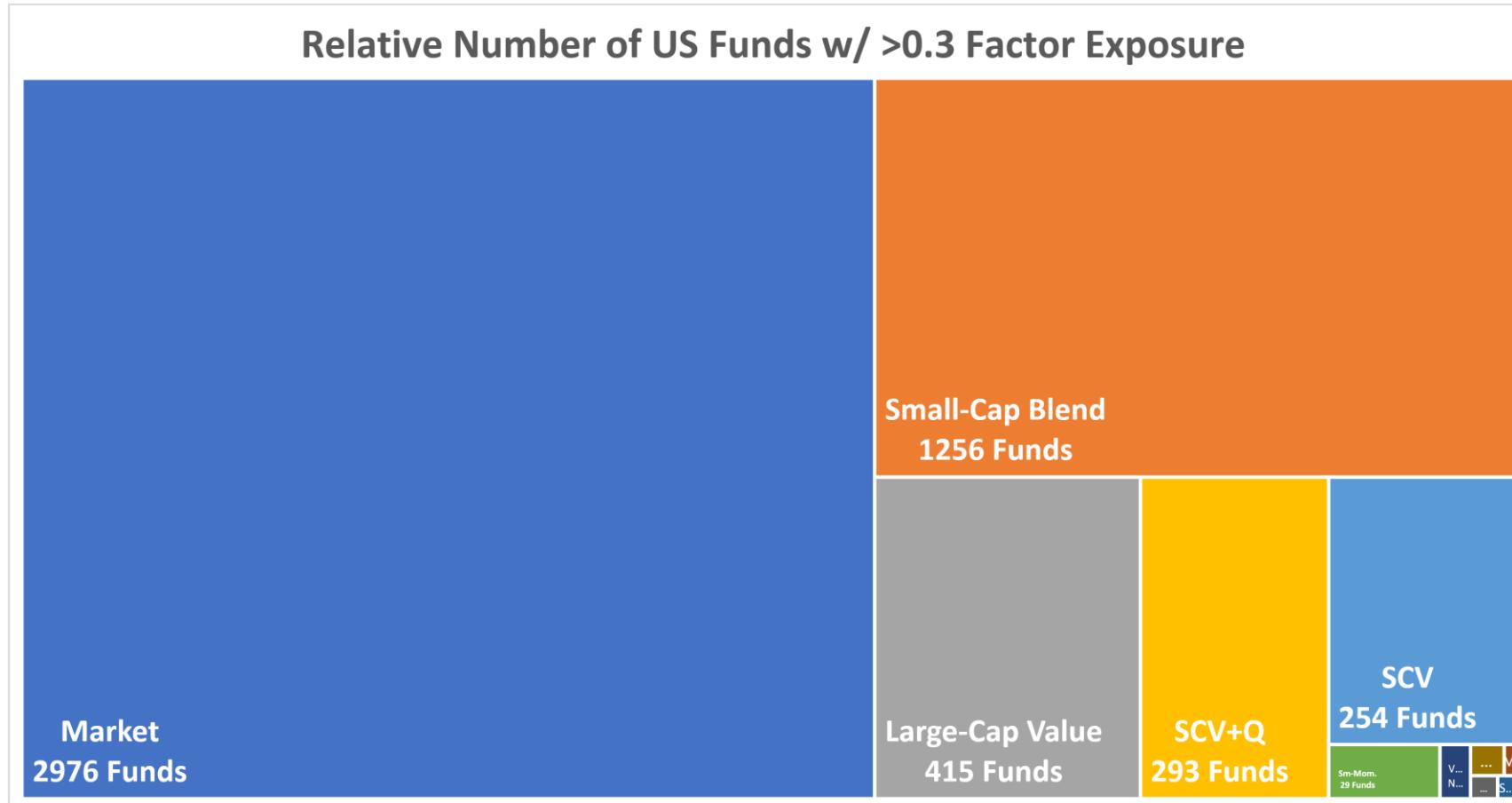


DFA US Small Cap Value I

DFA US Small Cap Value I - 12-month Rolling Excess Return



Not all factors equally available

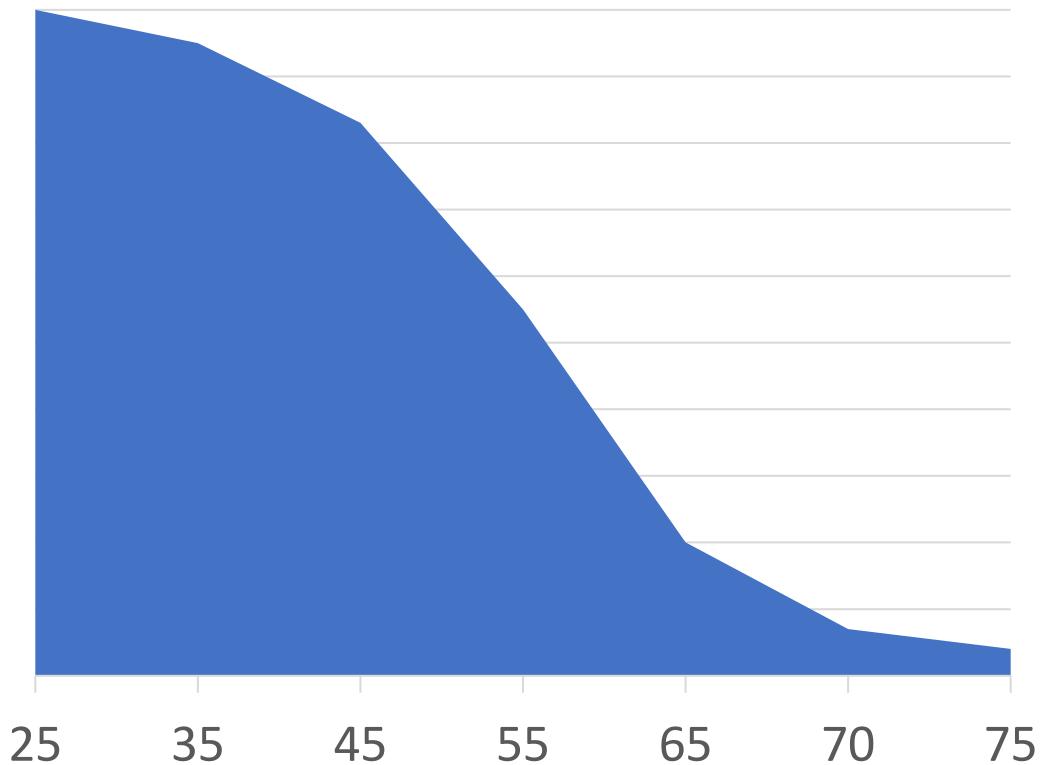


2 Funds for Life, Fixed Allocation, Lump Sum, Annually Rebalanced, Fine-Tuning Table																
Target Date Fund Years to Retirement:		25 (Or More) e.g., 2050 TDF	20 e.g., 2045 TDF	15 e.g., 2040 TDF	10 e.g., 2035 TDF	5 e.g., 2030 TDF	0 e.g., 2025 TDF	-7 (Or Less) e.g., 2015 TDF								
Simplified TDF Allocations	TDF Total US Stock Allocation	54%	49.5%	45%	40.5%	36%	30%	18%								
	TDF International LCB Stock Allocation	36%	33%	30%	27%	24%	20%	12%								
	TDF Int.-Term Gov't Bonds Allocation	10%	17.5%	25%	32.5%	40%	50%	70%								
0% US SCV, 100% TDF	Nominal CAGR / Worst 10-Yr. CAGR	9.8% / 1.1%	9.6% / 1.8%	9.4% / 2.4%	9.2% / 3.0%	9.0% / 3.5%	8.7% / 4.2%	8.0% / 3.4%								
	Annualized CAGR SD (Volatility)	13.4%	12.4%	11.3%	10.3%	9.3%	8.1%	6.0%								
	Worst Drawdown (Peak to Valley)	-48%	-44%	-40%	-36%	-31%	-25%	-17%								
	30-Year Safe Withdrawal Rate	4.2%	4.4%	4.5%	4.3%	4.2%	4.0%	3.5%								
10% US SCV, 90% TDF	Nominal CAGR / Worst 10-Yr. CAGR	10.3% / 1.9%	10.2% / 2.5%	10.0% / 3.0%	9.8% / 3.6%	9.6% / 4.0%	9.4% / 4.6%	8.7% / 4.2%								
	Annualized CAGR SD (Volatility)	13.8%	12.8%	11.9%	11.0%	10.1%	8.9%	6.8%								
	Worst Drawdown (Peak to Valley)	-49%	-45%	-42%	-38%	-34%	-29%	-17%								
	30-Year Safe Withdrawal Rate	4.2%	4.4%	4.6%	4.6%	4.6%	4.5%	4.1%								
20% US SCV, 80% TDF	Nominal CAGR / Worst 10-Yr. CAGR	10.8% / 2.6%	10.7% / 3.1%	10.5% / 3.6%	10.4% / 4.1%	10.2% / 4.5%	10.0% / 5.1%	9.4% / 4.9%								
	Annualized CAGR SD (Volatility)	14.3%	13.4%	12.6%	11.8%	10.9%	9.9%	7.9%								
	Worst Drawdown (Peak to Valley)	-50%	-47%	-44%	-41%	-37%	-32%	-22%								
	30-Year Safe Withdrawal Rate	4.1%	4.3%	4.5%	4.7%	4.7%	4.8%	4.6%								
30% US SCV, 70% TDF	Nominal CAGR / Worst 10-Yr. CAGR	11.2% / 3.2%	11.1% / 3.7%	11.0% / 4.2%	10.9% / 4.6%	10.8% / 5.0%	10.6% / 5.5%	10.1% / 5.6%								
	Annualized CAGR SD (Volatility)	14.8%	14.1%	13.4%	12.6%	11.9%	11.0%	9.3%								
	Worst Drawdown (Peak to Valley)	-51%	-48%	-46%	-43%	-40%	-36%	-27%								
	30-Year Safe Withdrawal Rate	4.0%	4.2%	4.3%	4.5%	4.7%	4.8%	4.8%								
40% US SCV, 60% TDF	Nominal CAGR / Worst 10-Yr. CAGR	11.7% / 3.9%	11.6% / 4.3%	11.5% / 4.7%	11.4% / 5.1%	11.3% / 5.4%	11.1% / 5.8%	10.8% / 6.2%								
	Annualized CAGR SD (Volatility)	15.5%	14.9%	14.2%	13.6%	13.0%	12.2%	10.7%								
	Worst Drawdown (Peak to Valley)	-52%	-50%	-48%	-46%	-44%	-40%	-33%								
	30-Year Safe Withdrawal Rate	3.8%	4.0%	4.1%	4.3%	4.4%	4.6%	4.9%								
50% US SCV, 50% TDF	Nominal CAGR / Worst 10-Yr. CAGR	12.1% / 4.5%	12.0% / 4.9%	12.0% / 5.2%	11.9% / 5.5%	11.8% / 5.8%	11.7% / 6.2%	11.4% / 6.4%								
	Annualized CAGR SD (Volatility)	16.2%	15.7%	15.2%	14.7%	14.2%	13.5%	12.3%								
	Worst Drawdown (Peak to Valley)	-54%	-52%	-51%	-49%	-47%	-44%	-39%								
	30-Year Safe Withdrawal Rate	3.6%	3.7%	3.9%	4.0%	4.1%	4.3%	4.7%								
100% US SCV	Nominal CAGR / Worst-10Yr CAGR: 13.9% / 4.2% (-9.8% in 1928)		Annualized CAGR SD: 20.6%		Worst Drawdown: -61%		30-Year SWR: 2.5%									
Sources & Assumptions: Assumes fixed asset class allocations, lumpsum investment, w/ annual rebalancing, for January 1970 through December 2022 returns. Safe withdrawal rates calculated with 1928-2022 annual returns. US Stock allocation modeled with US total market returns. International stock allocation modeled with International Large Cap blend. Bond allocation modeled with US Intermediate-term Government bonds.																
<ul style="list-style-type: none"> Young investors who contribute regularly will likely see lower drawdowns while contributions are large relative to account balance. <ul style="list-style-type: none"> Investors who rebalance less frequently will likely see higher returns and higher drawdowns. Real returns (adjusted for inflation) were about 3-4% less than the nominal returns shown. Past performance doesn't guarantee future returns. Drawdowns from 1928-1970 were worse by an additional 10% to more than 30%. 																

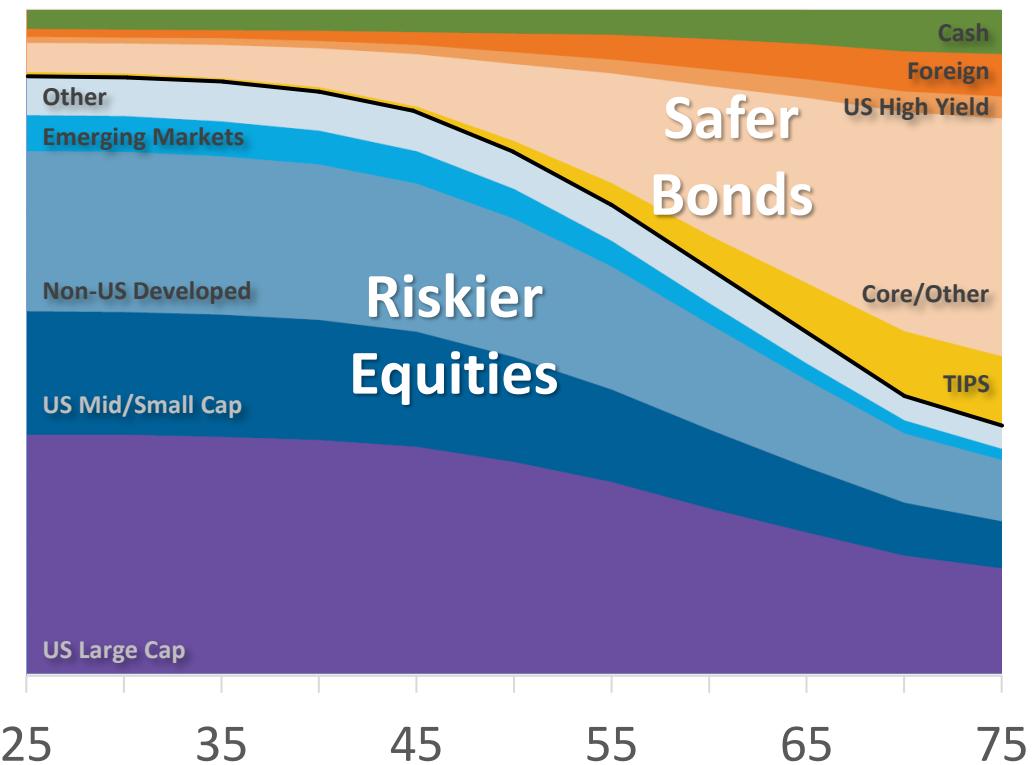
~60/40
Eq./Fl

Risk Versus Age

Human Capital vs. Age



Industry Average TDF Glidepath



Sources: Morningstar 2015 Target-Date Fund Landscape & 2013 Target-Date Series Research Paper

Why Target- Date Funds Matter

- “**Ninety-six percent** of plans offered target-date funds at year-end 2022”
- “**Eighty-three percent** of all participants used target-date funds, and
- “**Seventy-one percent of them** had their entire account invested in a single target-date fund in 2022.”