

Building and Managing a Diversified Portfolio

Craig L. Israelsen, Ph.D.

Designer of the *7Twelve*[®] Portfolio

Presentation to Portland, Oregon AAll Chapter

September 15, 2018

Based on research by Craig L. Israelsen, Ph.D.

Performance as of December 31, 2017

In 1970 you started investing:

For 48 years you invested money into...	In Jan 2018 your account balance was... <i>(you saved 10% of your income each year)</i>
Bucket in your room earning 0% interest	\$365,429
Savings account ("Cash")	\$823,677
7-Asset Diversified Portfolio of Stock, Bonds, Cash, Real Estate, Commodities	\$4,018,504

\$35,000 starting salary in 1970, 3% annual increase over 48 years

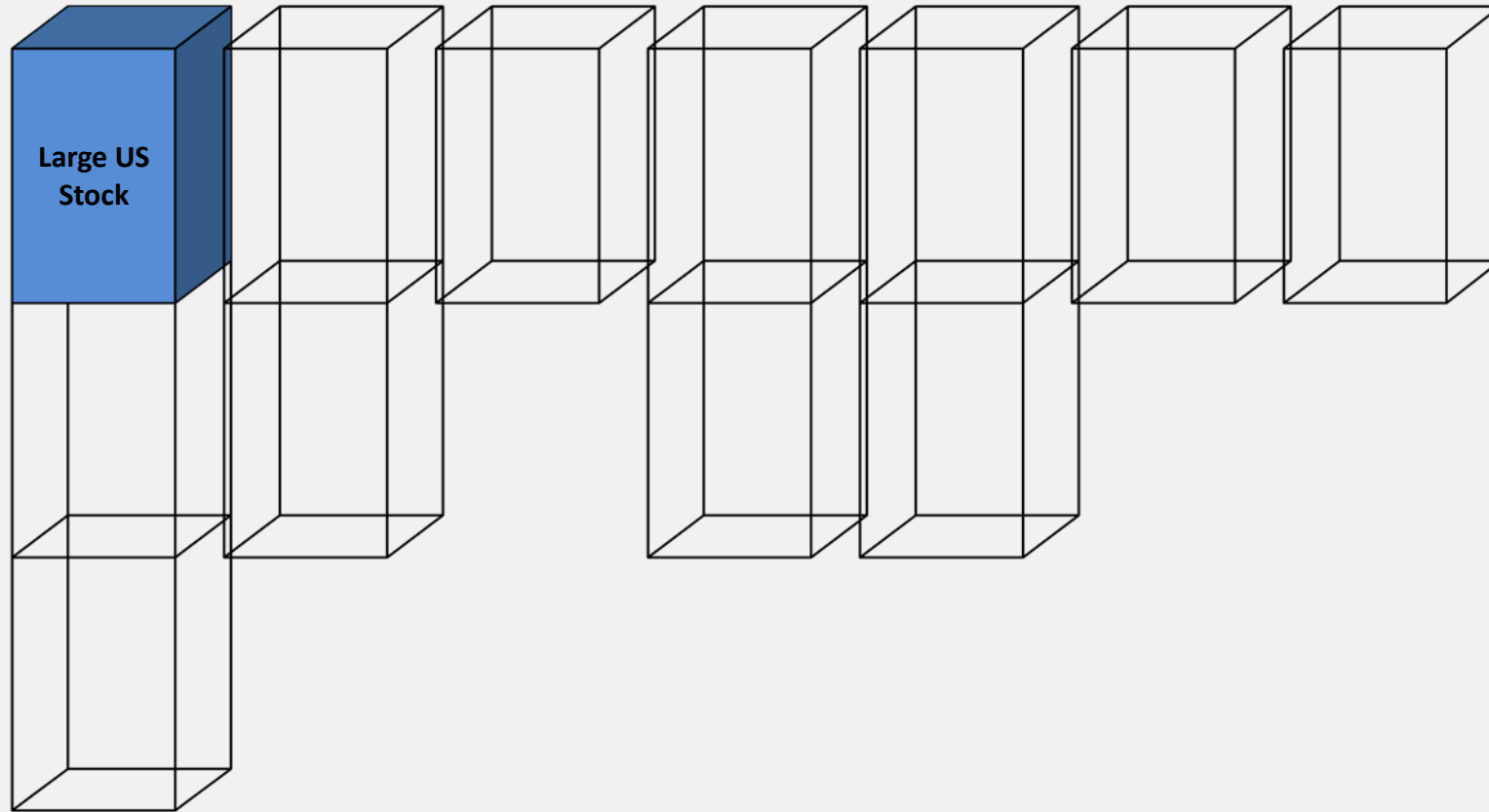
***What's in a
diversified portfolio?***

Building an investment portfolio is like making **salsa**...we add different ingredients together.



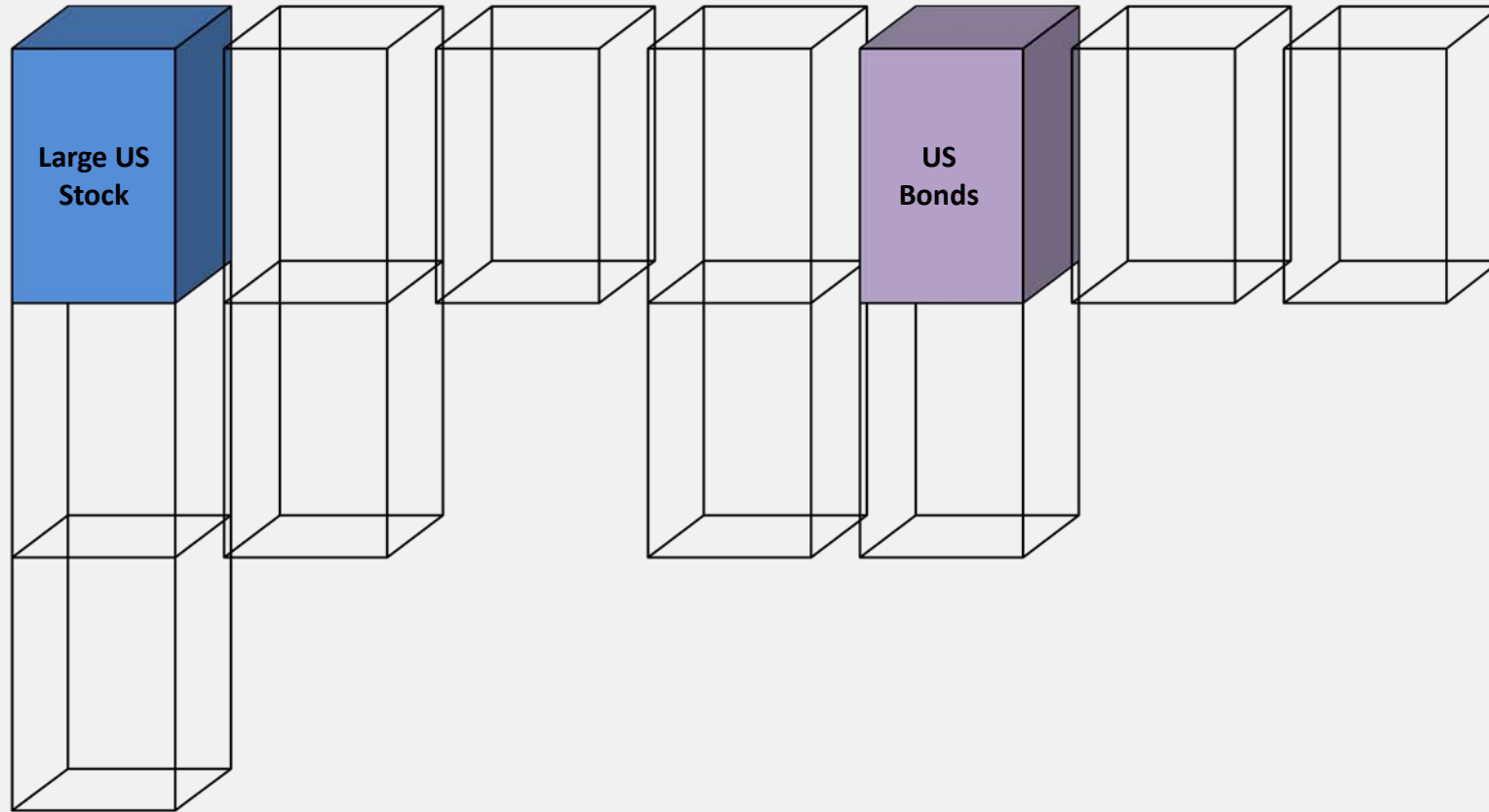
Minimal Diversification

The S&P 500 Index



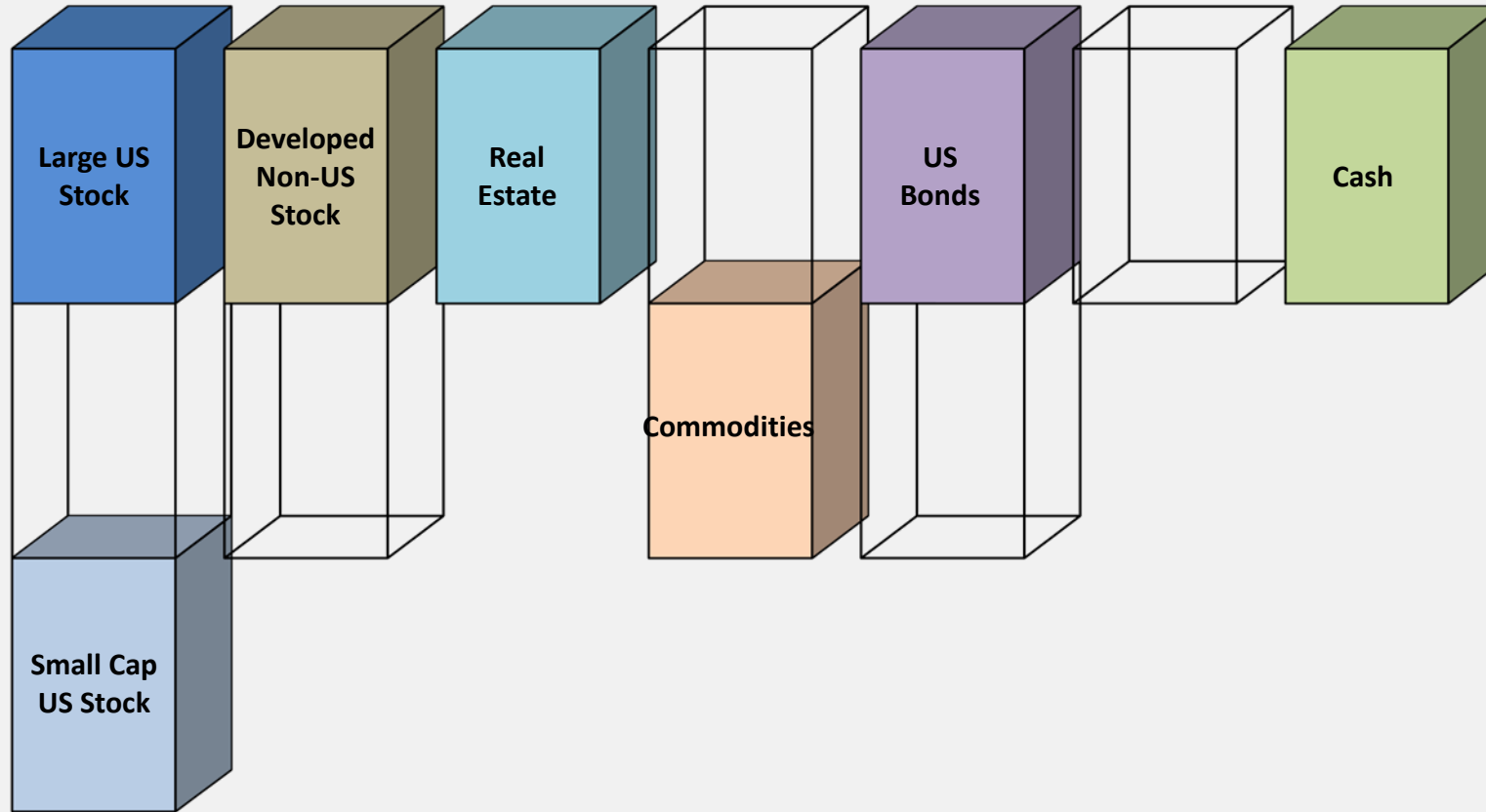
Two-Asset Diversification

60/40 Portfolio



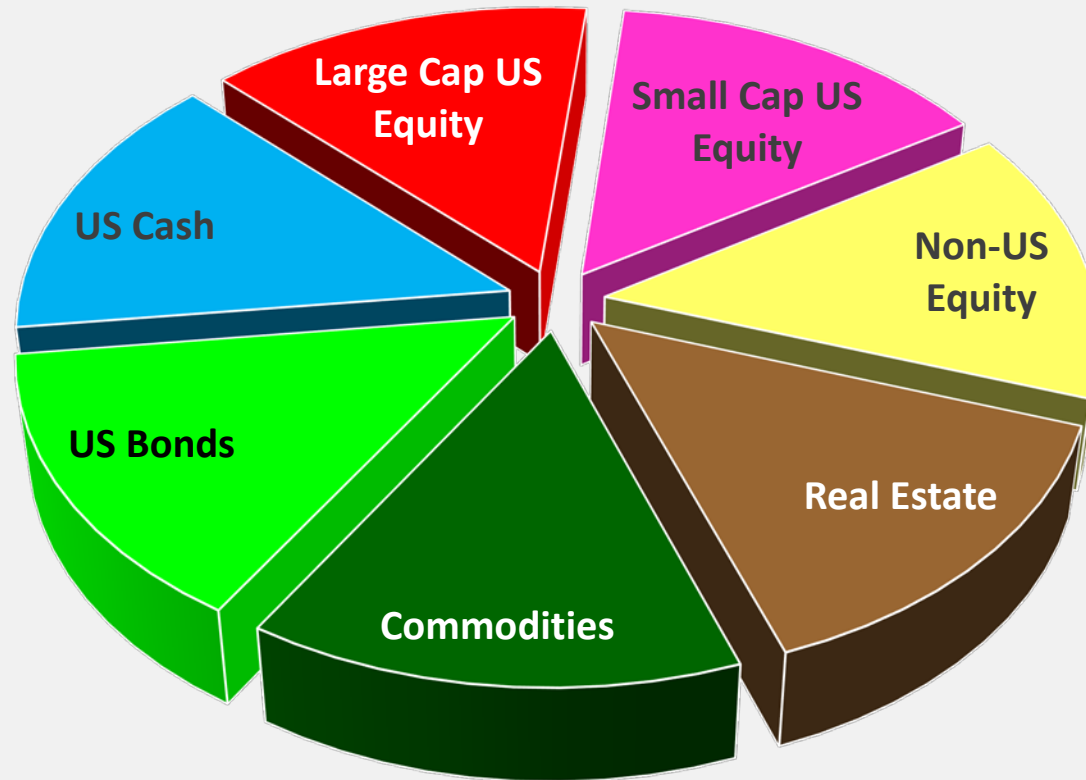
Diversified Portfolio

7-Asset Portfolio



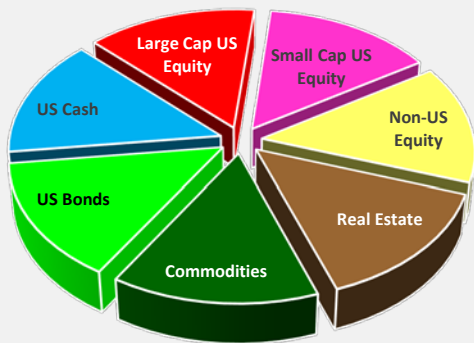
Multi-Asset Portfolio

7 Asset Classes – Equally Weighted – Rebalanced Annually



In 1970 you started investing:

For 48 years you invested money into...	In Jan 2018 your account balance was... <i>(you saved 10% of your income each year)</i>
Bucket in your room earning 0% interest	\$365,429
Savings account ("Cash")	\$823,677
7-Asset Diversified Portfolio of Stock, Bonds, Cash, Real Estate, Commodities	\$4,018,504



\$35,000 starting salary in 1970, 3% annual increase over 48 years

Multi-Asset Portfolio

1970-2017	Large US Equity	Small US Equity	Non-US Equity	US Bonds	Cash	Real Estate	Commodities	Equally Weighted 7-Asset Portfolio
48-Year Average Annualized % Return	10.54	11.10	8.94	7.53	4.86	11.76	6.99	9.84
48-Year Standard Deviation of Annual Returns	17.00	21.35	21.68	6.52	3.54	18.61	24.95	10.05
Number of Years with Negative Returns	9	14	14	3	0	8	14	6
Worst Three-Year Cumulative % Return	(37.61)	(42.24)	(43.32)	4.39	0.14	(35.61)	(55.60)	(13.37)

Indexes Used in Performance Calculations

(Indexes have no cost, but all mutual funds and ETFs have annual expenses)

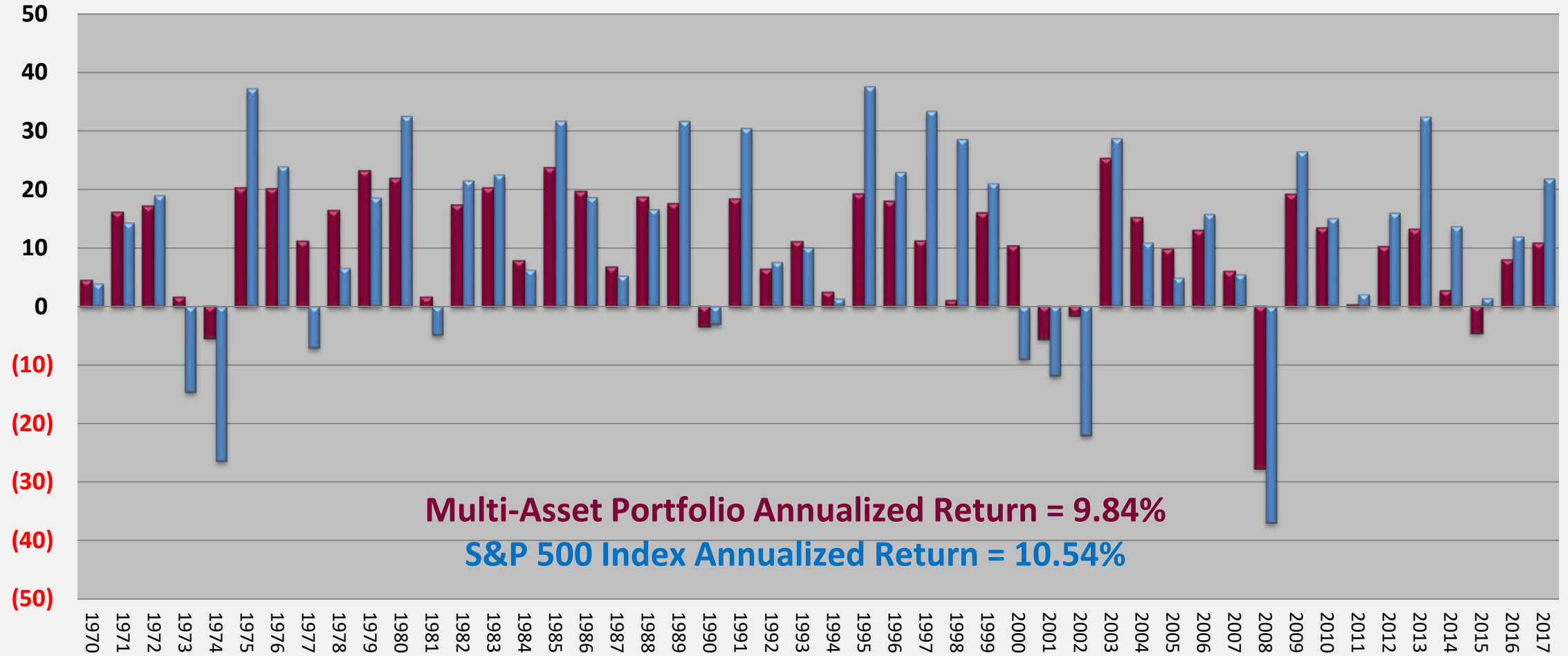
Data Source: Steele Mutual Fund Expert

- **Large-cap US equity** represented by the S&P 500 Index.
- **Small-cap US equity** represented by the Ibbotson Small Companies Index from 1970-1978, and the Russell 2000 Index starting in 1979.
- **Non-US equity** represented by the MSCI EAFE Index.
- **Real estate** represented by the NAREIT Index from 1972-1977 and the Dow Jones US Select REIT Index starting in 1978. (1970 and 1971 returns from research by Chan, Erickson, and Wang in “Real Estate Investment Trusts: Structure, Performance, and Investment Opportunities”, Table 2.2)
- **Commodities** represented by the Goldman Sachs Commodities Index (GSCI). As of February 6, 2007, the GSCI became the S&P GSCI Commodity Index.
- **U.S. Aggregate Bonds** represented by the Ibbotson Intermediate Term Bond Index from 1970-75 and the Barclays Capital Aggregate Bond index starting in 1976.
- **Cash** represented by 3-month Treasury Bills.

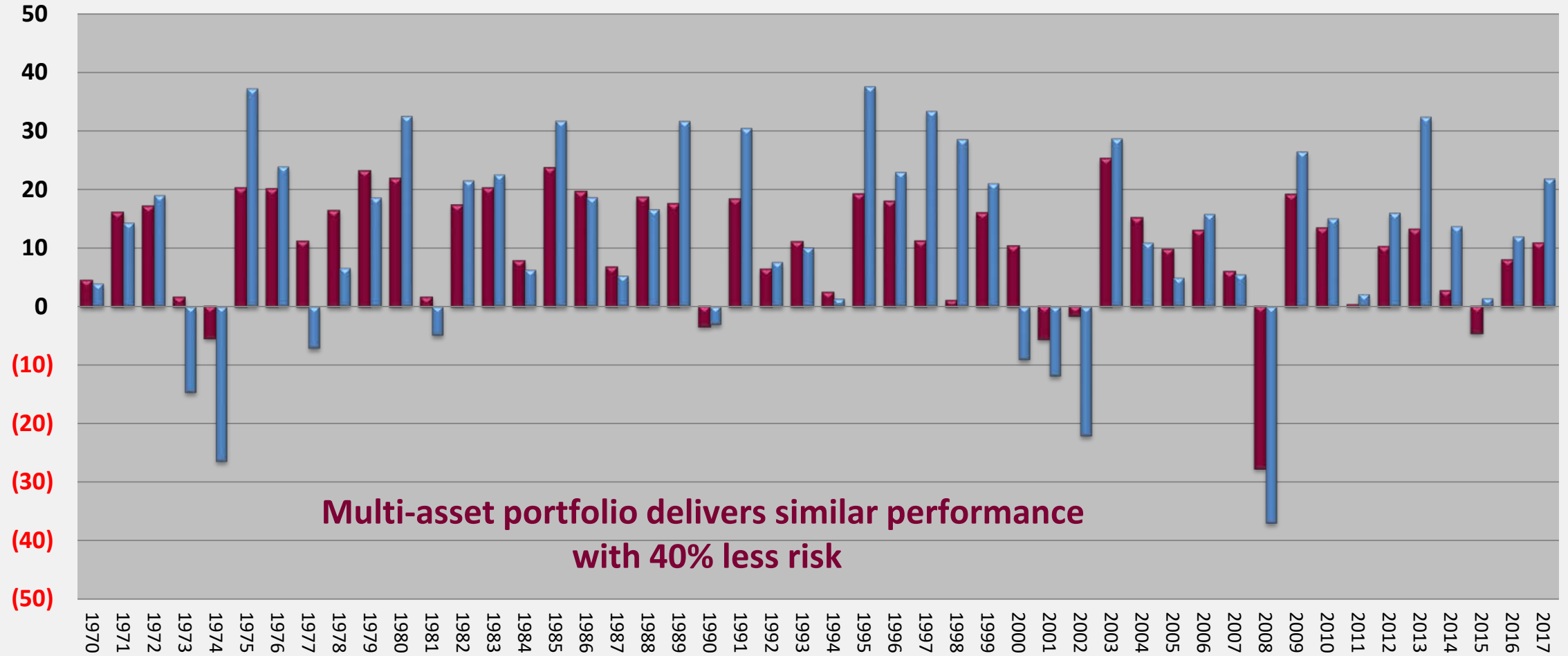
**Will a diversified,
multi-asset portfolio always win?**

No.

Annual Returns for **Multi-Asset Portfolio** vs. **S&P 500 Index** 48-year Period: 1970-2017



Annual Returns for **Multi-Asset Portfolio** vs. **S&P 500 Index** 48-year Period: 1970-2017



The Impact of Annual Portfolio Costs

**The annual expense ratio of the funds
in your portfolio represents an
on-going annual cost.**

**Recall that raw indexes have no cost,
but actual funds do.**

The impact of annual portfolio costs:


For 48 years you invested money into...	In Jan 2018 your account balance was... <i>(you saved 10% of your income each year)</i>		
	No portfolio cost	50 basis points	100 basis points
Bucket in your room earning 0% interest	\$365,429	\$365,429	\$365,429
Savings account ("Cash")	\$823,677	\$716,026	\$625,029
7-Asset Diversified Portfolio of Stock, Bonds, Cash, Real Estate, Commodities	\$4,018,504	\$3,388,114	\$2,861,645

Over \$526,000 lost by paying 100 bps compared to 50 bps

\$35,000 starting salary in 1970, 3% annual increase over 48 years

\$1,000,000 starting balance in retirement portfolio

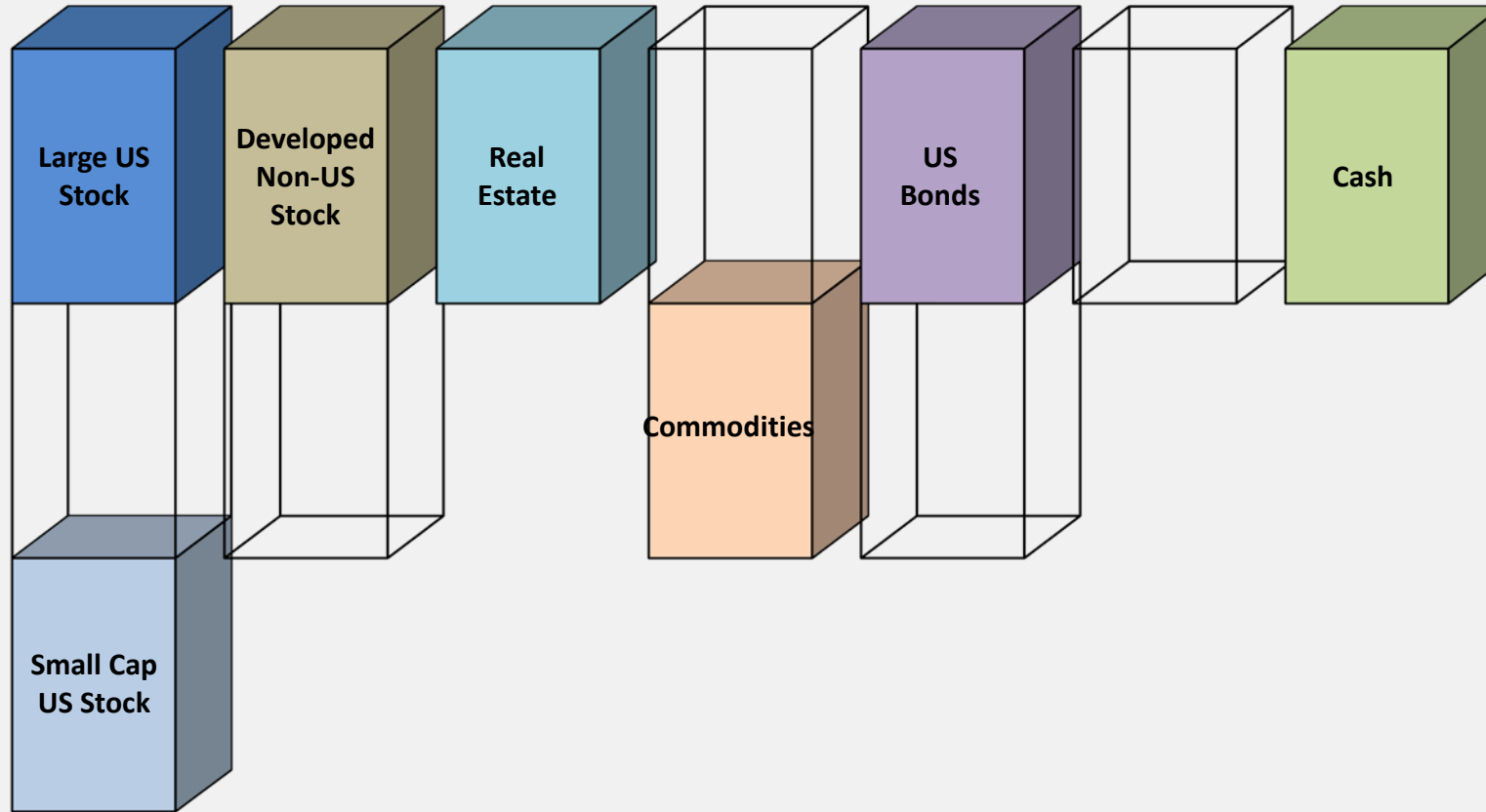
Combinations of fund expenses and advisory fee	Total Portfolio Cost (aggregate expense ratio of funds and advisory fee)	Average Annual Withdrawal from a Retirement Portfolio between the ages of 70 to 95* (using RMD guidelines)	Increase in Monthly Retirement Income for Retiree
Total fund expenses of 100 bps Advisory Fee of 100 bps	200 bps	\$124,320	---
Total fund expenses of 50 bps Advisory Fee of 100 bps	150 bps	\$133,927	\$800
Total fund expenses of 10 bps Advisory Fee of 90 bps	100 bps	\$144,361	\$1,670
Total Fund expenses of 10 bps Advisory fee of 40 bps	50 bps	\$155,695	\$2,614



**Moving from 7 assets
to *Twelve* assets**

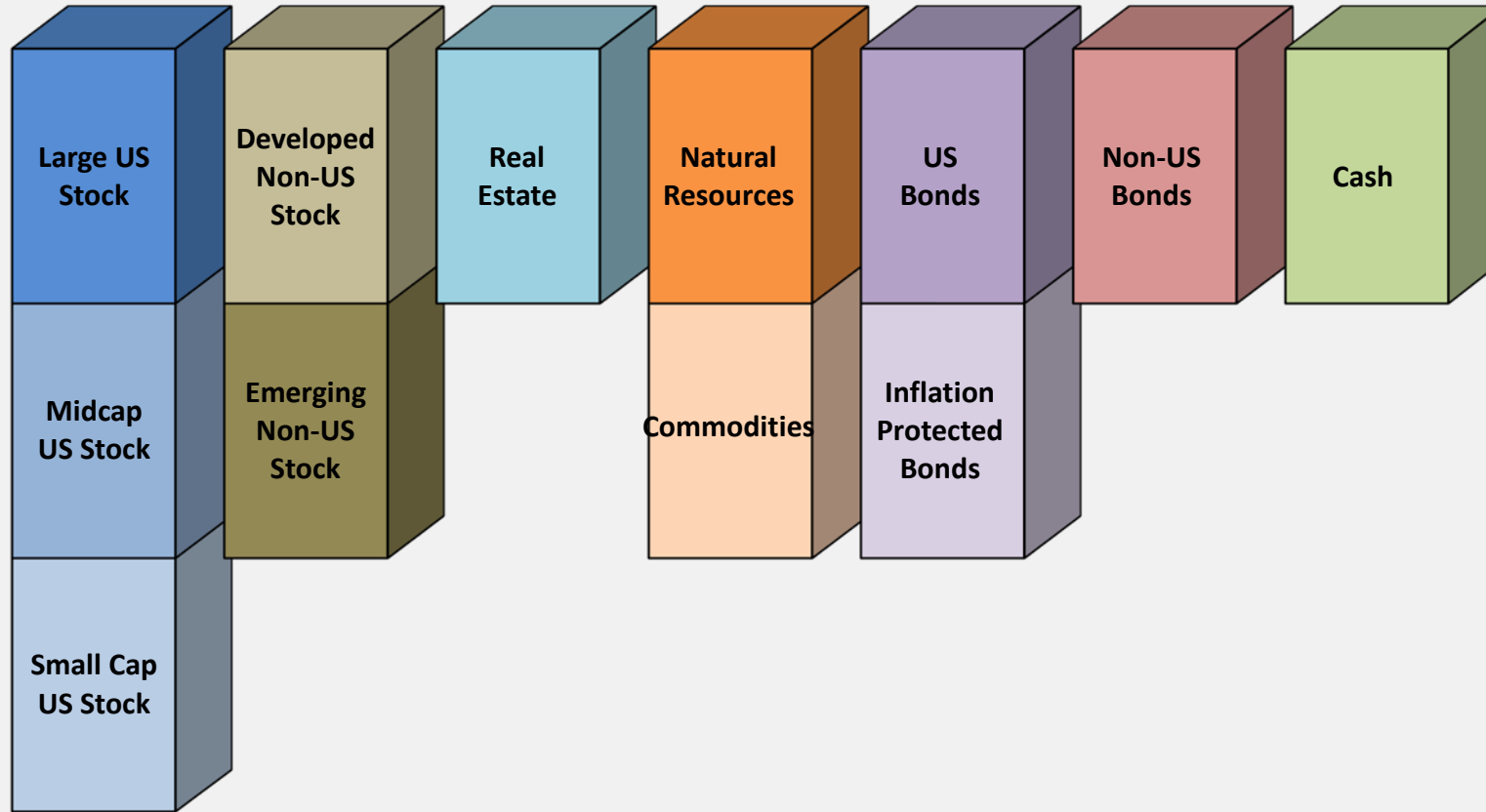
Good Diversification

7-Asset Portfolio



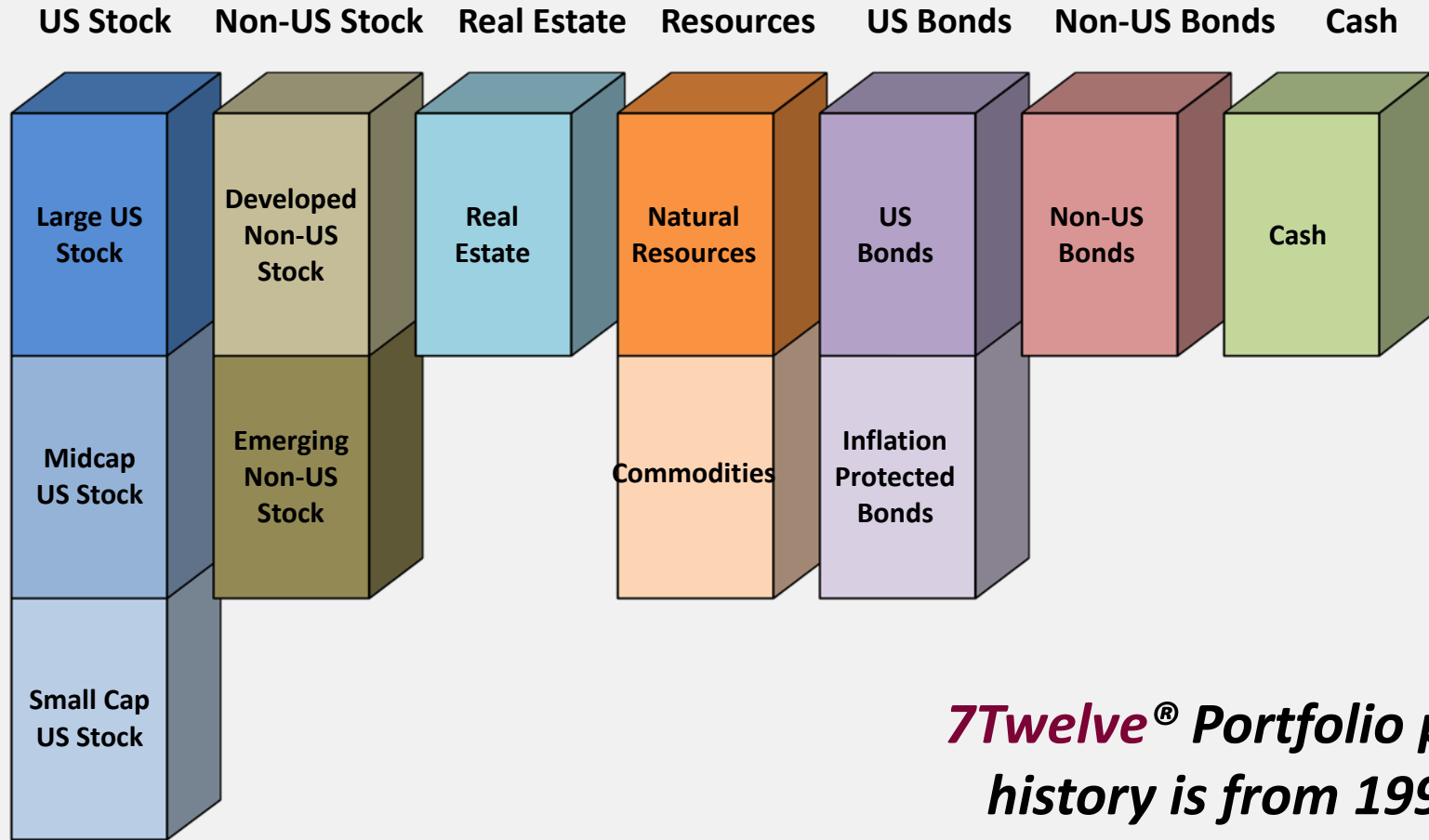
Superior Diversification

12-Asset Portfolio



7Twelve[®]

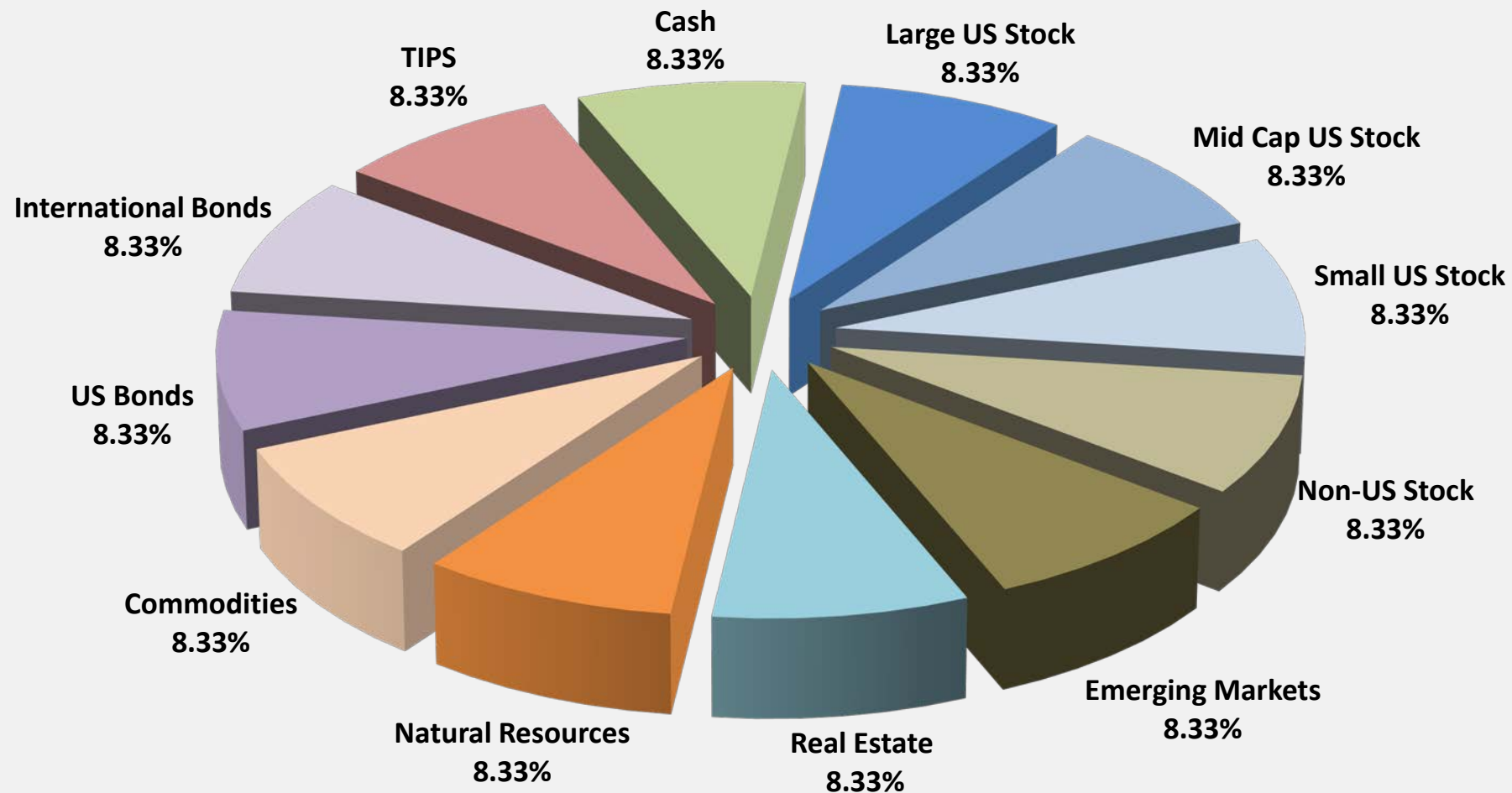
7 Core Asset Classes **Twelve** Actual Holdings



7Twelve[®] Portfolio performance history is from 1998-present. TIPS history is the limiting factor.

7Twelve®

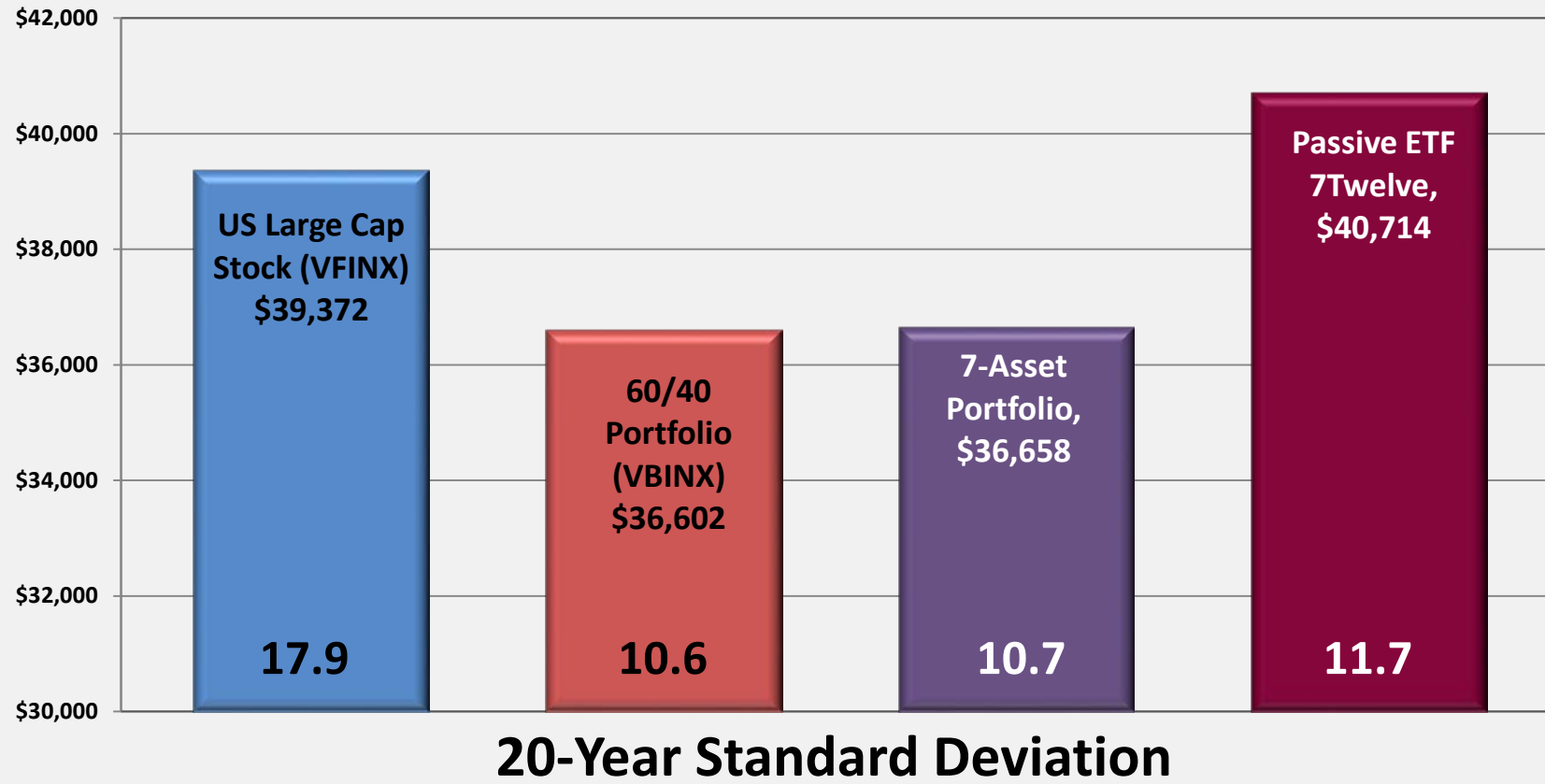
Equally-weighted exposure to 12 asset classes



20-Year Growth of \$10,000

1998-2017

[-----Using ETFs-----]



Asset Classes Take Turns Being the Star (in yellow) Don't chase them!

Indexes in the *7Twelve* Portfolio

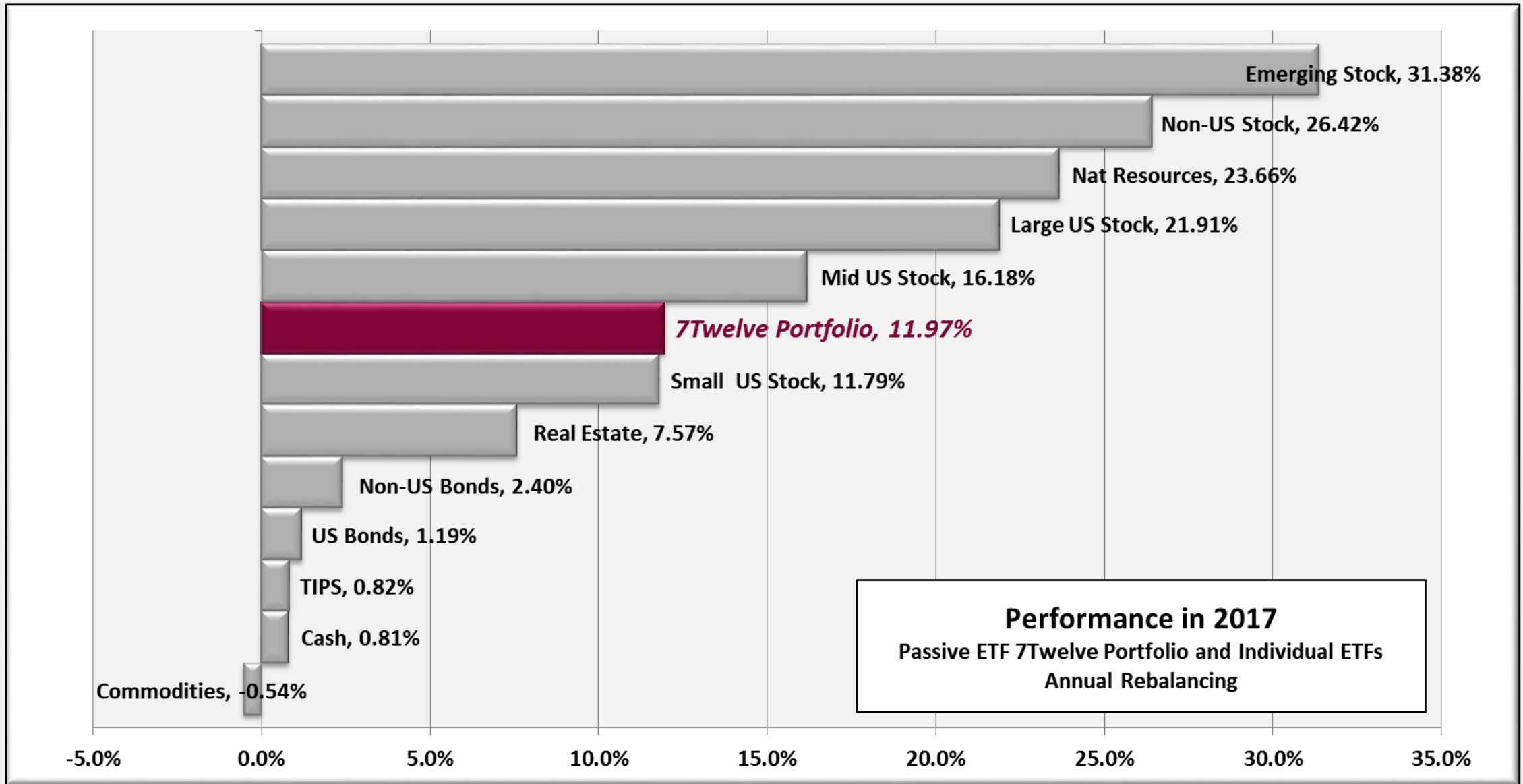
Year	Large US Stock	Midcap US Stock	Small Cap US Stock	Developed Non-US Stock	Emerging Non-US Stock	Real Estate	Natural Resources	Commodities	US Bonds	TIPS	Non-US Bonds	Cash	7Twelve Portfolio Equal Allocation to all 12. Annual rebalance.
2003	28.68	35.62	38.79	38.59	56.28	38.96	34.40	25.56	4.10	8.40	14.78	1.03	27.10
2004	10.88	16.48	22.65	20.25	25.95	33.80	24.59	36.38	4.34	8.46	10.33	1.44	17.96
2005	4.91	12.56	7.68	13.54	34.54	10.41	36.61	27.83	2.43	2.84	-6.66	3.25	12.49
2006	15.79	10.32	15.12	26.34	32.55	38.79	16.85	11.47	4.33	0.41	6.44	4.85	15.27
2007	5.49	7.98	-0.30	11.17	39.82	-11.13	34.44	26.83	6.97	11.64	10.57	4.44	12.33
2008	-37.00	-36.23	-31.07	-43.38	-53.18	-45.04	-42.55	-31.89	5.24	-2.35	10.23	1.39	-25.49
2009	26.46	37.38	25.57	31.78	79.02	33.68	37.54	16.16	5.93	11.41	2.63	0.16	25.64
2010	15.06	26.64	26.31	7.75	19.20	23.44	23.88	11.78	6.54	6.31	5.90	0.15	14.41
2011	2.11	-1.73	1.02	-12.14	-18.17	1.70	-7.35	-2.44	7.84	13.56	6.33	0.06	-0.77
2012	16.00	17.88	16.33	17.32	18.63	23.73	2.20	4.06	4.21	6.98	1.83	0.08	10.77
2013	32.39	33.50	41.31	22.78	-2.27	2.81	16.49	-6.58	-2.02	-8.61	-4.30	0.06	10.46
2014	13.69	9.77	5.75	-4.90	-1.82	22.81	-9.77	-26.44	5.97	3.64	-0.79	0.03	1.49
2015	1.38	-2.18	-1.97	-0.81	-14.60	0.59	-24.28	-26.71	0.55	-1.44	-3.29	0.05	-6.06
2016	11.96	20.74	26.56	1.00	11.60	6.90	30.87	19.14	2.65	4.68	1.65	0.32	11.51
2017	21.83	16.24	13.23	25.03	37.75	8.63	1.23	5.18	3.54	3.01	7.29	0.93	11.99
15-Year Ave Annualized % Return	9.92%	12.00%	12.27%	8.11%	12.68%	10.15%	8.74%	3.81%	4.15%	4.43%	4.02%	1.20%	8.46%
15-Year Std Dev of Annual Returns	16.35%	18.37%	18.23%	20.50%	32.61%	22.23%	24.37%	21.29%	2.56%	5.96%	6.18%	1.64%	12.99%

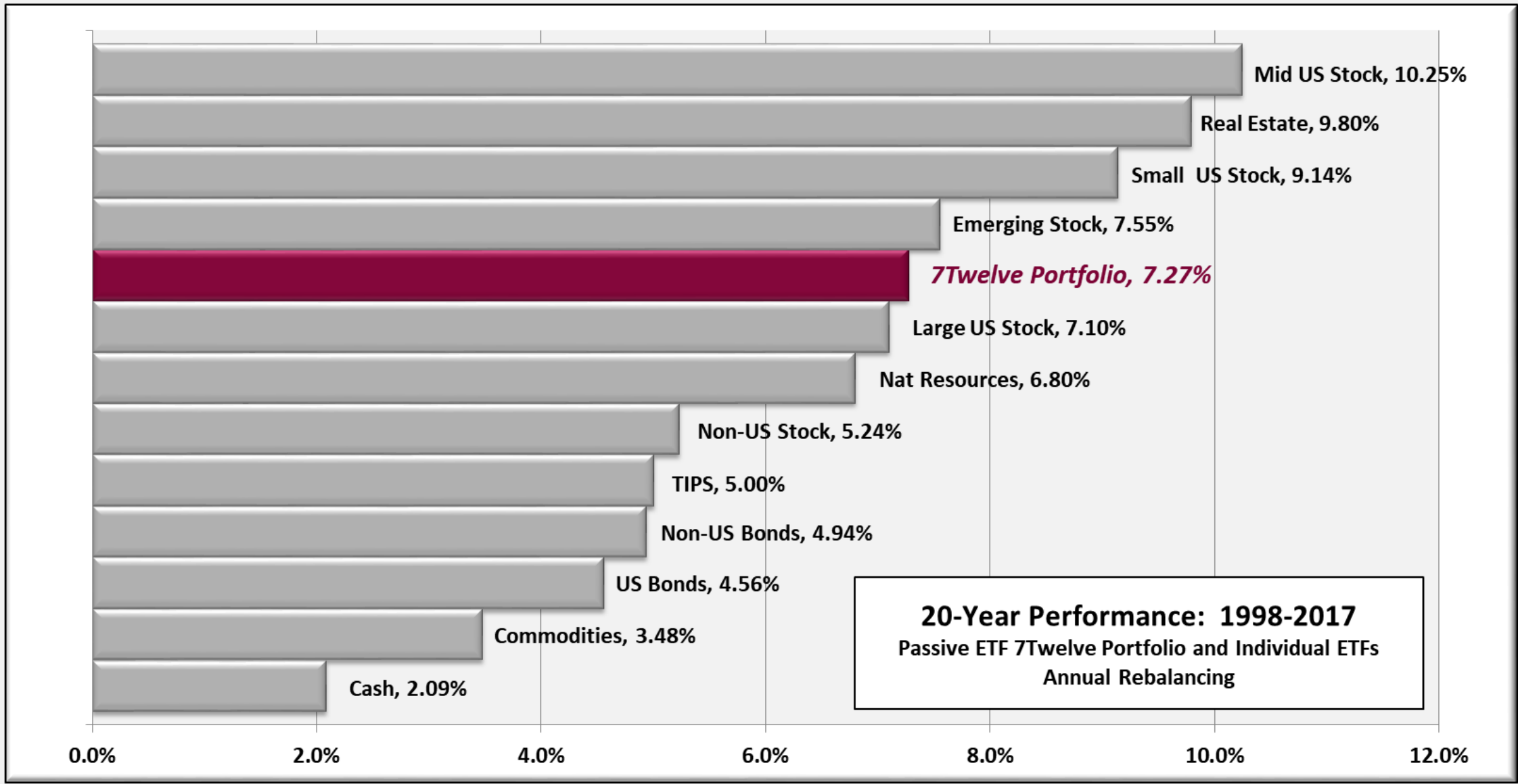
Stop Chasing Performance

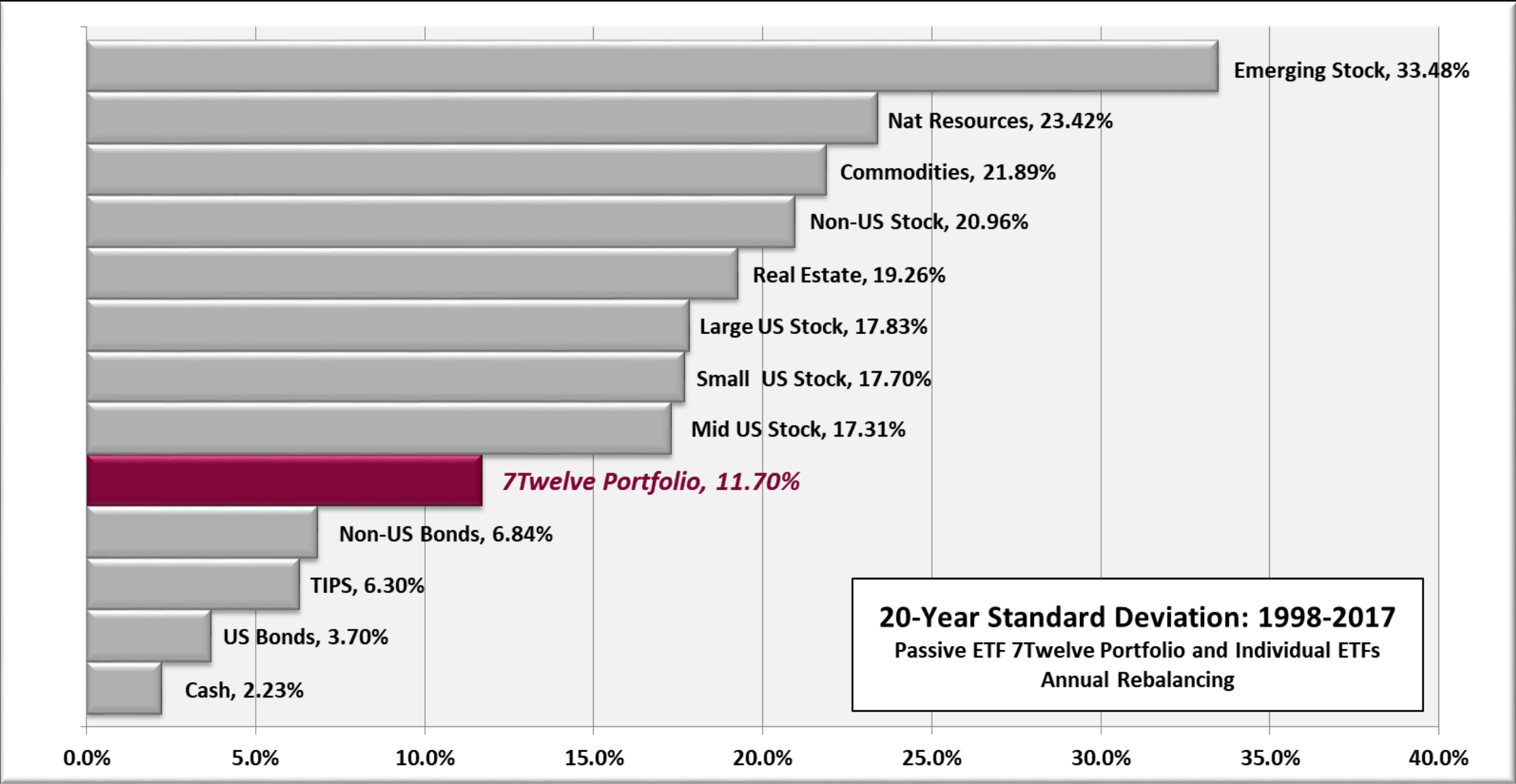
Passive ETF **7Twelve** Portfolio with annual rebalancing



Investment Approach	15-Year Annualized Performance (2003-2017)	20-Year Annualized Performance (1998-2017)
HARE: Performance Chasing by Investing 100% in Last Year's BEST ETF	4.59	4.84
HARE II: Performance Chasing by Investing 100% in Last Year's WORST ETF	5.44	2.86
TORTOISE: Invest in the equally weighted 12-asset 7Twelve ETF model	8.38	7.27

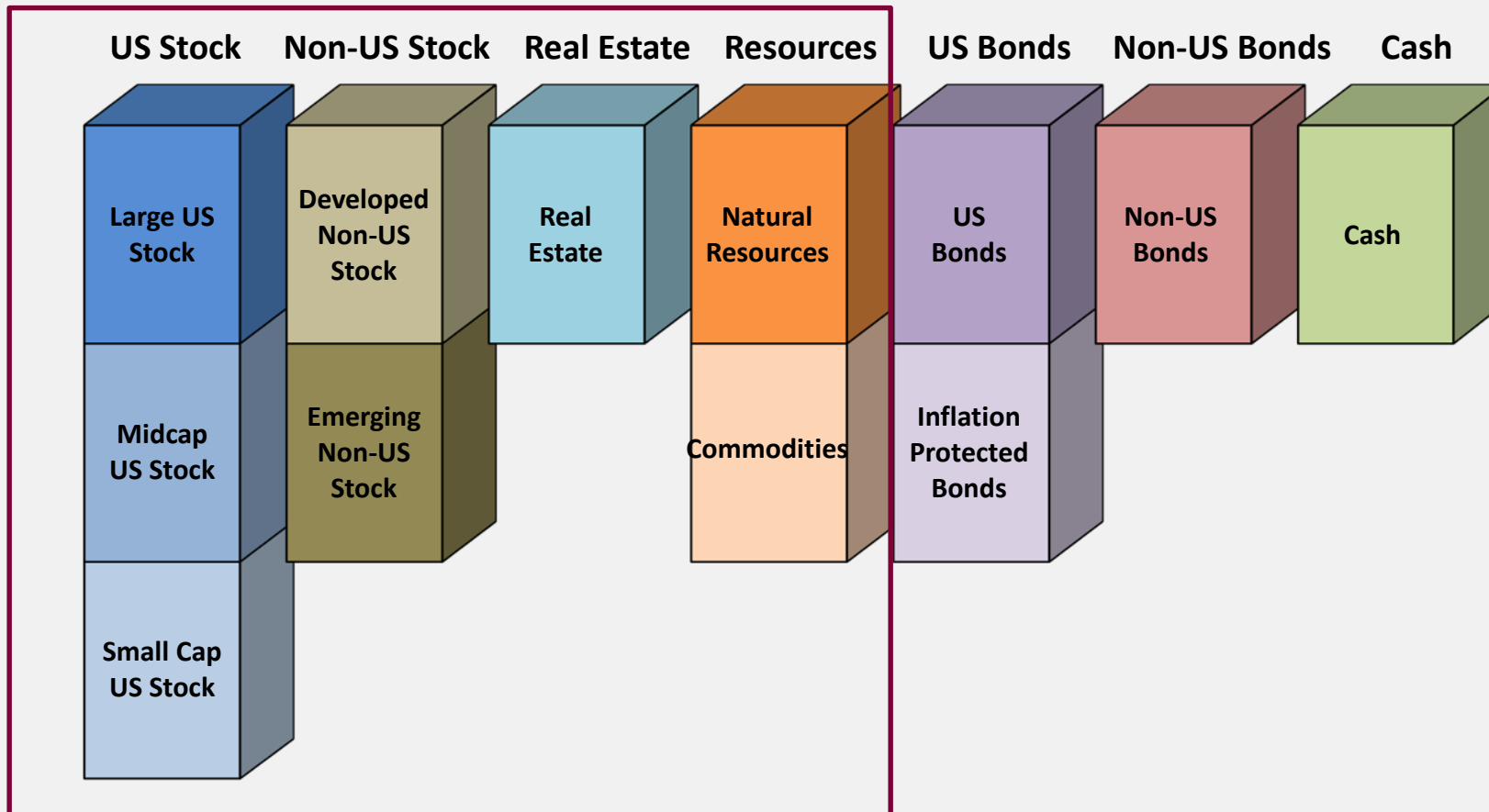






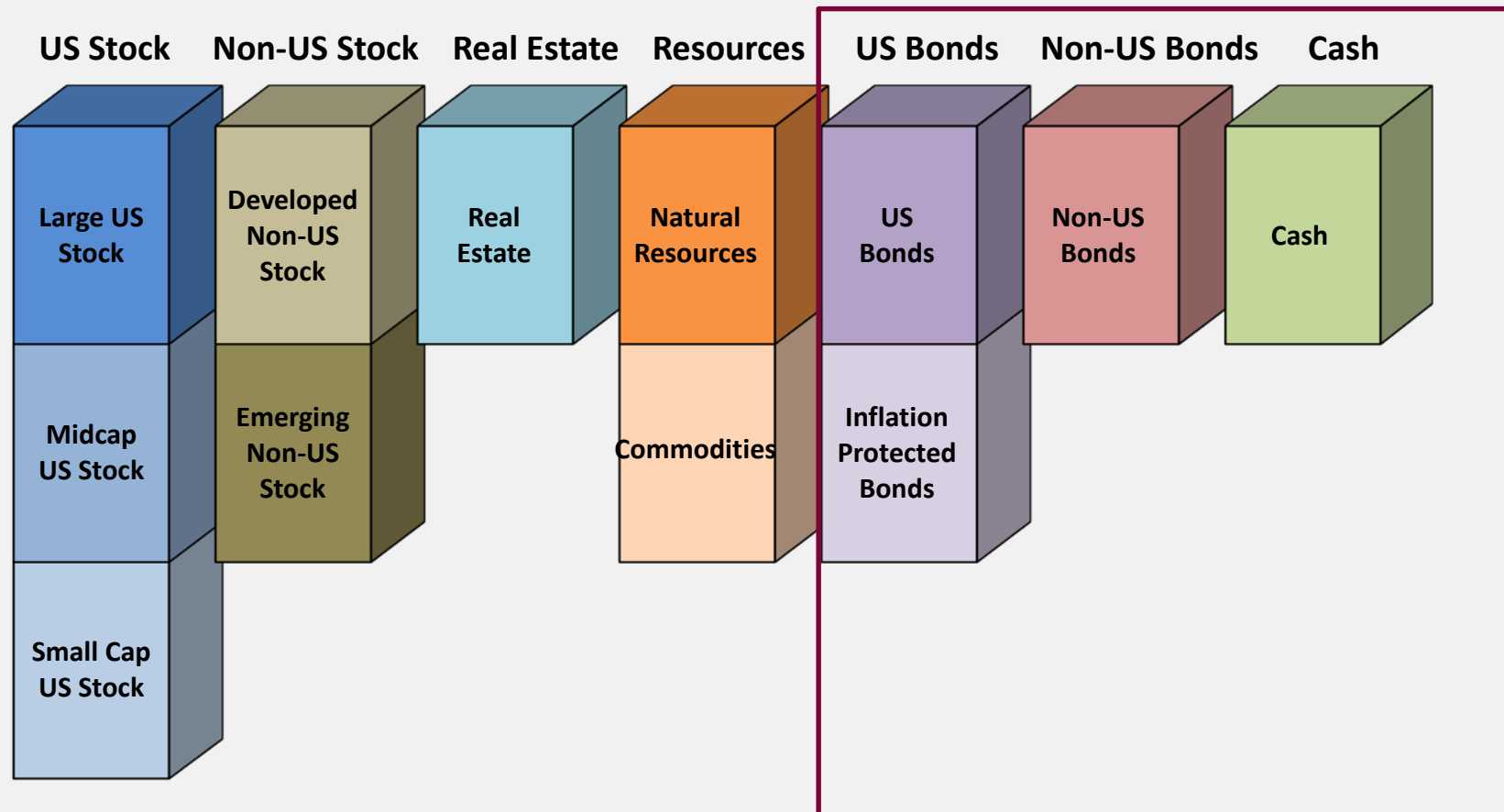
7Twelve®

Eight Equity and Diversifying Holdings The “Engines” of the Portfolio



7Twelve[®]

Four Fixed Income Holdings
The **“Safety Brakes”** of the Portfolio



Year	7Twelve Brakes (4 ETFs)	7Twelve Engines (8 ETFs)
1998	8.33	(1.85)
1999	0.33	25.06
2000	8.13	4.06
2001	4.78	(5.30)
2002	12.02	(6.96)
2003	7.05	36.91
2004	6.00	23.71
2005	0.36	18.34
2006	3.99	20.45
2007	8.53	13.11
2008	2.46	(38.98)
2009	6.11	35.41
2010	4.20	19.51
2011	6.19	(4.59)
2012	4.18	13.87
2013	(3.61)	16.28
2014	2.25	2.62
2015	0.48	(7.85)
2016	2.28	14.07
2017	1.31	17.30
20-Year Ave. Annualized Return	4.21	8.22
20-Year Standard Deviation	3.7	17.6

Brakes have outperformed
35% of the time

Year	7Twelve Brakes (4 ETFs)	7Twelve Engines (8 ETFs)
1998	8.33	(1.85)
1999	0.33	25.06
2000	8.13	4.06
2001	4.78	(5.30)
2002	12.02	(6.96)
2003	7.05	36.91
2004	6.00	23.71
2005	0.36	18.34
2006	3.99	20.45
2007	8.53	13.11
2008	2.46	(38.98)
2009	6.11	35.41
2010	4.20	19.51
2011	6.19	(4.59)
2012	4.18	13.87
2013	(3.61)	16.28
2014	2.25	2.62
2015	0.48	(7.85)
2016	2.28	14.07
2017	1.31	17.30
20-Year Ave. Annualized Return	4.21	8.22
20-Year Standard Deviation	3.7	17.6

Brakes have outperformed
35% of the time

Engines have outperformed
65% of the time

7Twelve®

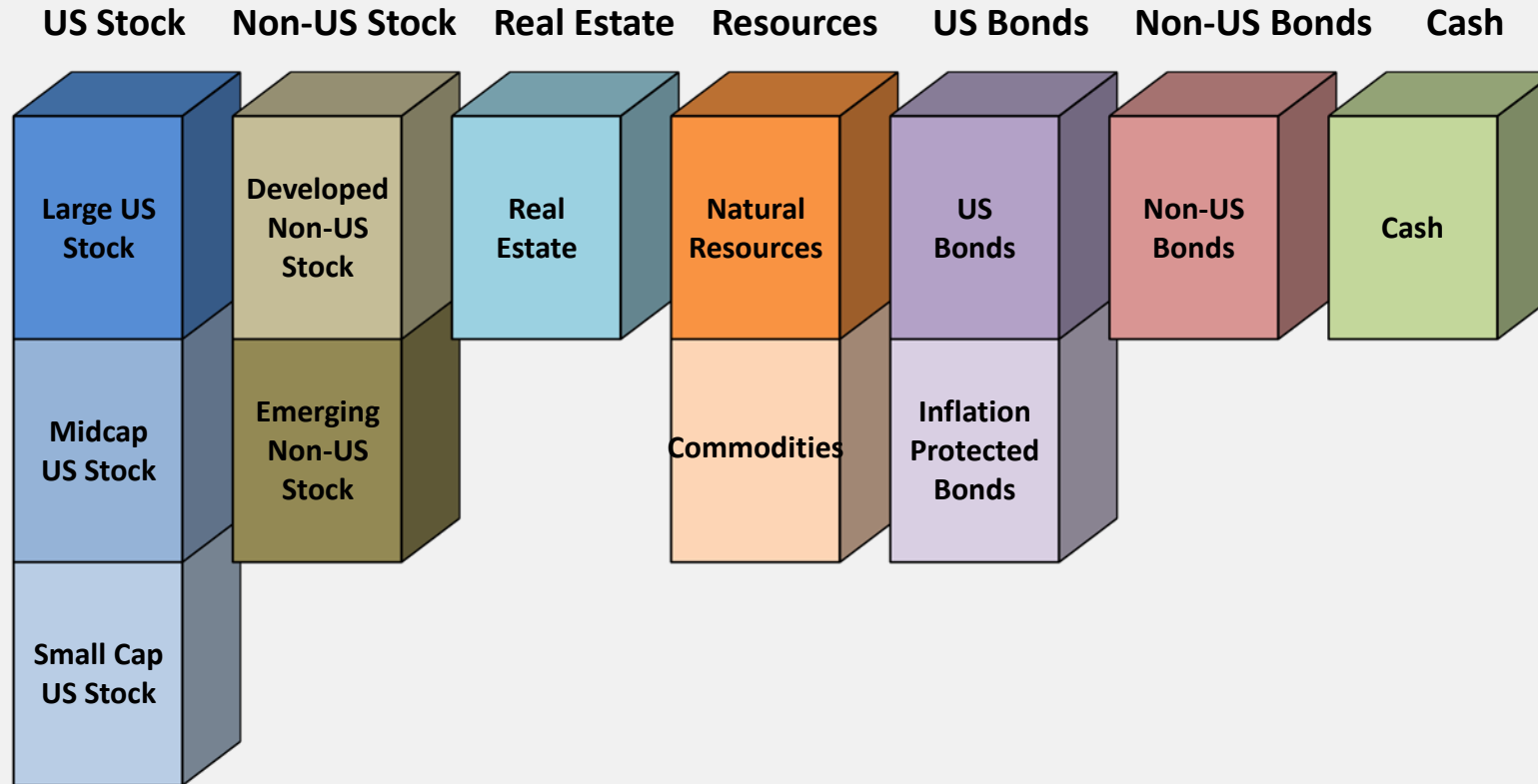
A Multi-Asset Balanced Strategy

Equities and Diversifiers: 8 ENGINES

65% of Overall Portfolio Allocation

Fixed Income: 4 BRAKES

35% of Overall Portfolio Allocation



Year	7Twelve Brakes (4 ETFs)	7Twelve Engines (8 ETFs)	Full 7Twelve Model (12 ETFs)
1998	8.33	(1.85)	1.54
1999	0.33	25.06	16.82
2000	8.13	4.06	5.42
2001	4.78	(5.30)	(1.94)
2002	12.02	(6.96)	(0.64)
2003	7.05	36.91	26.95
2004	6.00	23.71	17.80
2005	0.36	18.34	12.34
2006	3.99	20.45	14.96
2007	8.53	13.11	11.58
2008	2.46	(38.98)	(25.16)
2009	6.11	35.41	25.64
2010	4.20	19.51	14.41
2011	6.19	(4.59)	(1.00)
2012	4.18	13.87	10.64
2013	(3.61)	16.28	9.65
2014	2.25	2.62	2.50
2015	0.48	(7.85)	(5.07)
2016	2.28	14.07	10.14
2017	1.31	17.30	11.97
20-Year Ave. Annualized Return	4.21	8.22	7.27
20-Year Standard Deviation	3.7	17.6	11.7

Full **7Twelve** model delivers **88%** of the performance of the engines with only **66%** of the risk—thanks to the brakes.

Just like your car, **7Twelve** maintains a constant commitment to engines AND brakes.

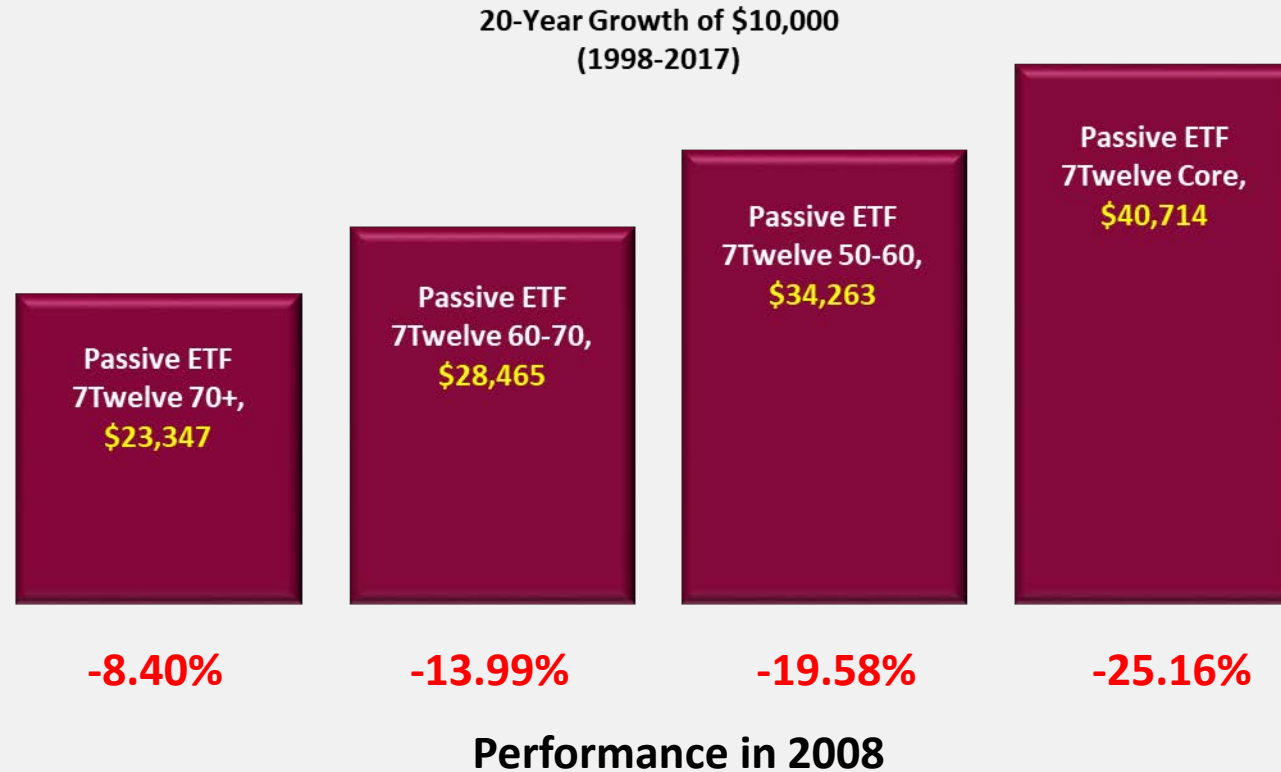
7Twelve[®] Age-Based Models

Portfolio Allocations

	7Twelve Core Model	7Twelve Age-Based 50-60	7Twelve Age-Based 60-70	7Twelve Age-Based 70+
Large US Stock	8.33%	6.67%	5.00%	3.33%
Mid Cap US Stock	8.33%	6.67%	5.00%	3.33%
Small US Stock	8.33%	6.67%	5.00%	3.33%
Non-US Stock	8.33%	6.67%	5.00%	3.33%
Emerging Markets	8.33%	6.67%	5.00%	3.33%
Real Estate	8.33%	6.67%	5.00%	3.33%
Natural Resources	8.33%	6.67%	5.00%	3.33%
Commodities	8.33%	6.67%	5.00%	3.33%
US Bonds	8.33%	6.67%	5.00%	3.33%
Inflation Protected Bonds	8.33%	6.67%	5.00%	3.33%
International Bonds	8.33%	6.67%	5.00%	3.33%
Cash	8.33%	26.67%	45.00%	63.33%

7Twelve®

Growth of \$10,000 over 20 Years from 1998-2017 Core 7Twelve model and Age-Based Models



20-Year Retirement Portfolio Analysis: 1998-2017

\$250,000 Initial Account Value on Jan 1, 1998 in Passive ETF 7Twelve Models

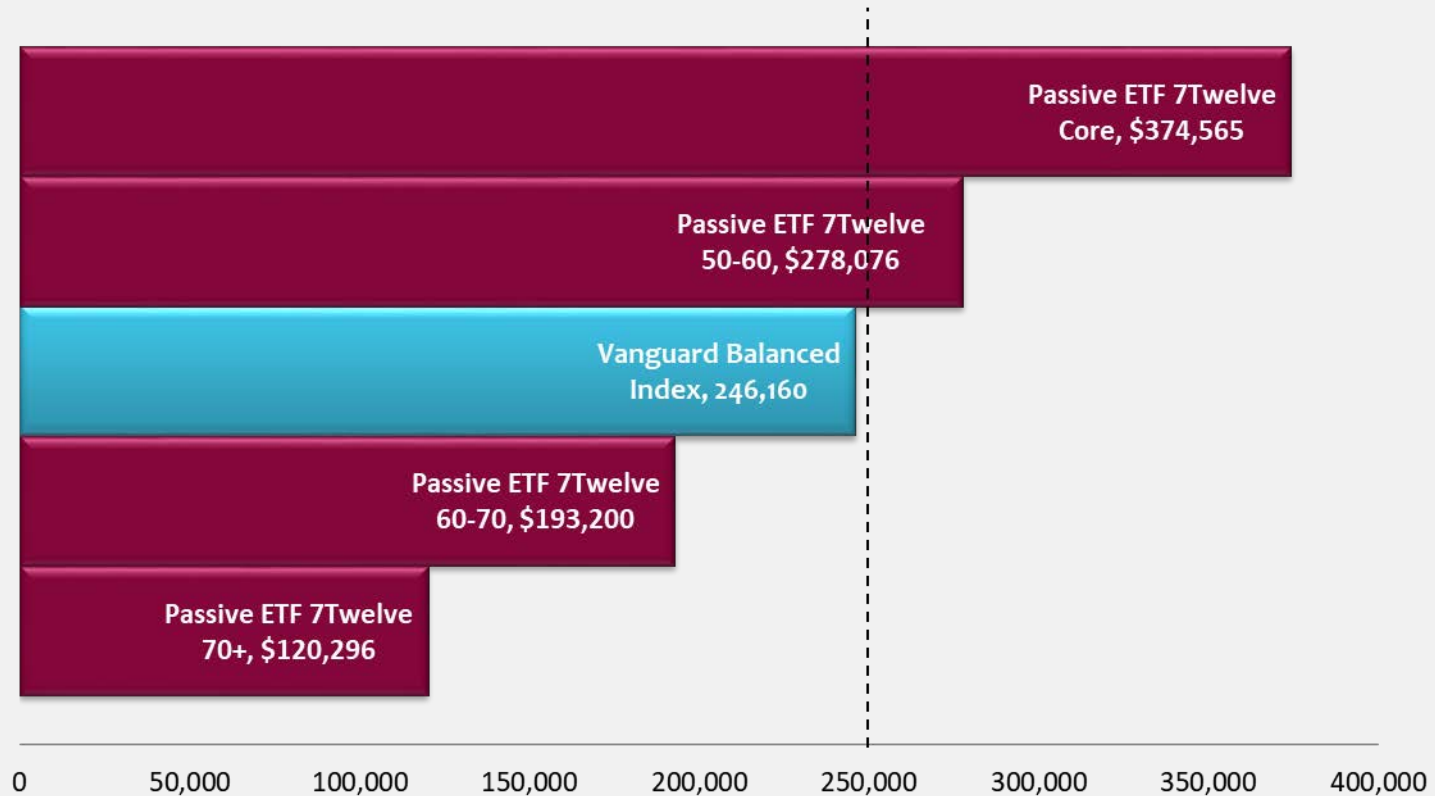
5% Initial Withdrawal

3% Annual Increase in Annual Withdrawal

Total Withdrawal of \$335,880

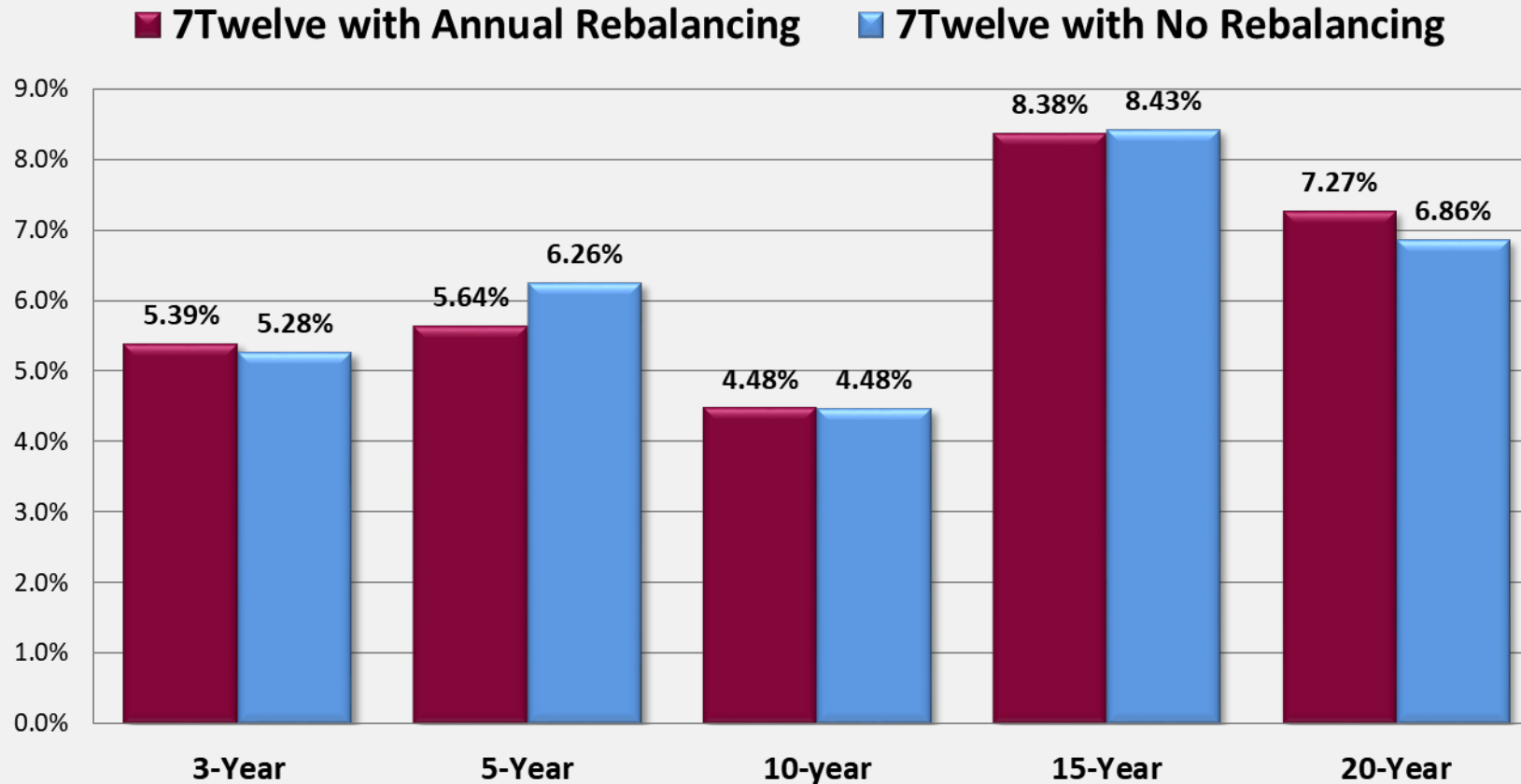
20-Year Period

Ending Account Balance on December 31, 2017



7Twelve®

Rebalancing Comparison as of Dec 31, 2017 using Passive ETF 7Twelve Model



Annualized Return as of December 31, 2017



Passive ETF 7Twelve model

Rebalancing Frequency

20-Year Annualized Return

**No
Rebalancing**

6.86

**Monthly
Rebalancing**

7.05

**Quarterly
Rebalancing**

7.19

**Semi-annual
Rebalancing**

7.14

**Annual
Rebalancing**

7.27

Low-Cost *7Twelve*[®] Models

12-Asset Class <i>7Twelve</i> [®] Portfolio	12 Actively Managed Mutual Funds <i>(Active 7Twelve)</i>	12 ETFs from various fund families <i>(Passive 7Twelve)</i>	12 Vanguard Mutual Funds	12 Vanguard ETFs	12 Fidelity Mutual funds	12 ETFs available at Schwab
Portfolio Aggregate Annual Expense Ratio	0.55	0.16	0.23	0.09	0.38	0.16
20-Year Average Annualized Return (1998-2017)	7.98	7.27	7.67	7.77	7.90	7.42

Research reports available that outline the funds used to build each of these *7Twelve* models

Disclosures

Performance in the past is not a guarantee of performance in the future.

Raw data source: Steele Mutual Fund Expert

Calculations: Craig Israelsen, Ph.D.

Performance of the individual ETFs and the Passive ETF 7Twelve Portfolio in the prior slides generally reflects the performance of the following indexes.

US Large cap	S&P 500 Index (TR)
US Mid Cap	S&P Midcap 400 Index (TR)
US Small Cap	S&P Small Cap 600 Index (TR)
Non-US Developed	MSCI EAFE Index NR USD
Emerging	MSCI EM Index GR USD
Real Estate	S&P Global REIT Index TR USD
Natural Resources	S&P North American Natural Resources Index TR
Commodities	Deutsche Bank Liquid Commodity Optimum Yield Diversified Commodity Index Total Return
US Bonds	Barclays US Aggregate Bond Index TR USD
TIPS	Barclays U.S. Treasury US TIPS Index TR USD
Non-US Bonds	Barclays Global Treasury Index TR
Cash	USTREAS Stat US T-Bill 90 Day TR



Craig L. Israelsen, Ph.D.

Executive-in-Residence
Financial Planning Program
Utah Valley University
801-489-4711

7Twelve[®] Portfolio

craig@7TwelvePortfolio.com

www.7TwelvePortfolio.com

Copyright © 2008-2018 Craig L. Israelsen
All rights reserved