The Dangers of Ignoring Uncompensated Risk

Presented by:
Stewart Frank, CPA/PFS, AIFA®
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Personal Financial Planning Section Tax | Retirement | Estate | Risk Management | Investments

Learning objectives

- Learn the laws and regulations applicable to managing uncompensated risk.

- Learn how the laws are applied to portfolio management.

- Learn how uncompensated risk is prudently monitored and managed using a case study example of an actual retirement plan portfolio.

- Learn how to use your newly gained knowledge for winning significant new business and increasing assets under management (AUM).

Part I – Fiduciary Laws Governing Management of Uncompensated Risk & Diversification

Presenter: W. Scott Simon, J.D., CFP®, AIFA®

W. Scott Simon

Background:

Although Scott is a licensed attorney and member of the California Bar, he utilizes his investment fiduciary expertise as an Investment advisor at Retirement Wellness Group, an SEC-registered investment advisory firm specializing in providing ERISA section 3(38) investment manager services to 401(k) plans as well as non-ERISA plans non-profits including endowments and foundations.

He is the columnist of Morningstar's popular monthly Fiduciary Focus column, encompassing nearly 175 published articles on modern prudent fiduciary investing since 2003. And has authored other published articles. He is also the author of two books; The Prudent Investor Act: A Guide to Understanding; and Index Mutual Funds: Profiting From an Investment Revolution (Foreword by John C. Bogle)

In addition to his investment advisory practice and authorships, Scott provides expert witness and consulting services in the areas of the Uniform Prudent Investor Act, the Restatement (Third) of Trusts and Title I of ERISA.

Education:

Southwestern University School of Law, J.D., Law

University of California Los Angeles, B.A. Political Science

Licenses and Designations:

Certified Financial Planner

Chartered Financial Analyst (CFA) program (Level II)

Member, State Bar of California

Admitted to Practice, U.S. District Court, Central District of California

Admitted to Practice, U.S. Tax Court

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The "Big Bang" of All Modern Finance

- Title: Portfolio Selection

- Author: Harry Markowitz

- Publication: The Journal of Finance, Vol. 7, No. 1 (Mar., 1952), pp. 77-91 (article consists of 15 pages)

- Published by: Blackwell Publishing for the American Finance Association

The Prices of <u>Highly Correlated</u> Stocks Move in the Same Direction

- The market prices of stocks with high correlation to each in a portfolio often tend to move in the same general direction at the same time in response to news

The Behavior of Highly Correlated Stocks
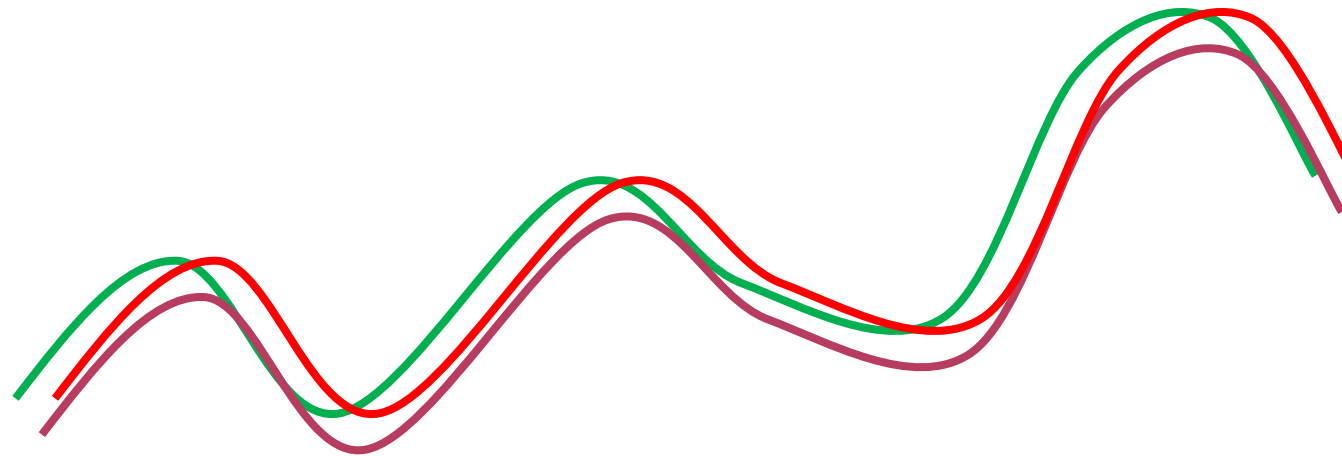
The Prices of Highly Uncorrelated Stocks Move in Different Directions

- The market prices of stocks with high correlation to each in a portfolio often tend to move in different directions at the same time in response to news

The Behavior of Highly Uncorrelated Stocks
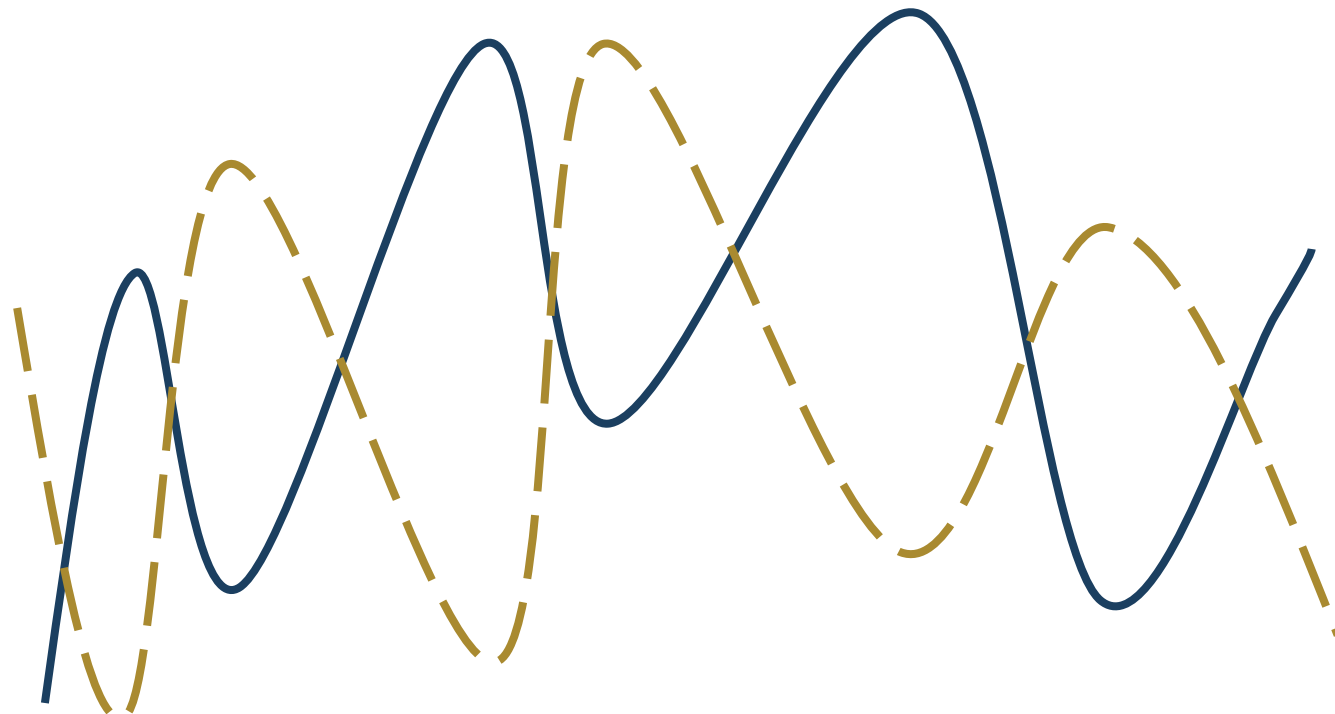
The Impact of Two Ideas About Diversification

- The 1950s (and even today)

  – Invest in those stocks that it's hoped will <u>maximize</u> portfolio <u>return</u> – with little thought that such <u>highly correlated</u> stocks may, in fact, <u>reduce return</u>

- Harry Markowitz

  – Invest in those highly uncorrelated stocks that do, in fact, <u>reduce</u> portfolio <u>risk</u> – and in a relatively easy and inexpensive way

Harry M. Markowitz

- 1990 Nobel Laureate in Economics and the Father of Modern Portfolio Theory

The Prefatory Note to the Uniform Prudent Investor Act

- "[F]rom the late 1960's the investment practices of fiduciaries experienced significant change.

- [The Uniform Prudent Investor Act] undertakes to update trust investment law in recognition of the alterations that have occurred in investment practice.

- These changes have occurred under the influence of a large and broadly accepted body of empirical and theoretical knowledge about the behavior of capital markets, often described as 'modern portfolio theory.'"

Modern Prudent Fiduciary Investing

- All modern prudent fiduciary investing derives from two works that have been published within the last quarter century:

- Restatement (Third) of Trusts (1992)

  – Legal treatise that updates the 1935 Restatement of Trusts and the 1959 Restatement (Second) of Trusts

  – The Prudent Investor Rule which includes Black-Letter Law, Comments, Illustrations and Reporter's Notes

- Uniform Prudent Investor Act (1994)

  – 23-page codification of the Restatement

  – Virtually all states have enacted some form of the Uniform Prudent Investor Act into law
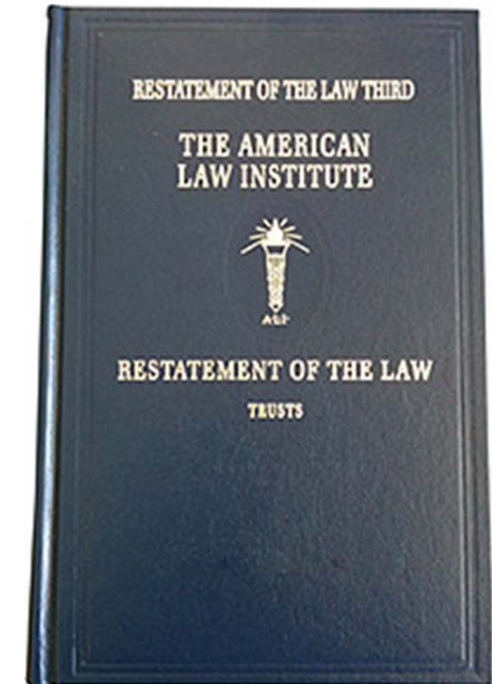
1992 Restatement (Third) of Trusts
(Published by the American Law Institute)
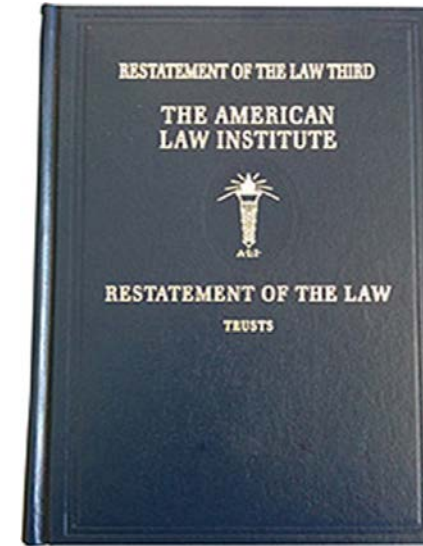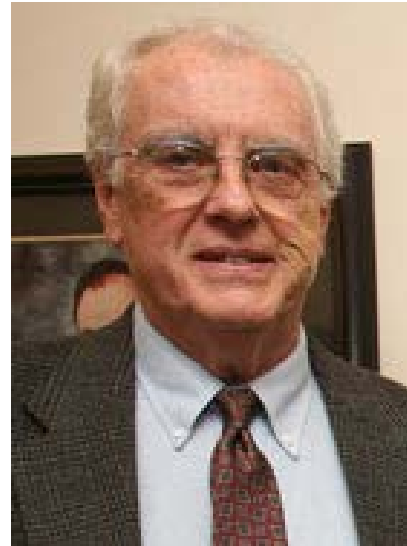
1994 Uniform Prudent Investor Act (Published by the National Conference of Commissioners on Uniform State Laws)

UNIFORM PRUDENT INVESTOR ACT

Drafted by the

NATIONAL CONFERENCE OF COMMISSIONERS
ON UNIFORM STATE LAWS

and by it

APPROVED AND RECOMMENDED FOR ENACTMENT
IN ALL THE STATES

at its

ANNUAL CONFERENCE
MEETING IN ITS ONE-HUNDRED-AND-THIRD YEAR
IN CHICAGO, ILLINOIS
JULY 29 - AUGUST 5, 1994

WITH PREFATORY NOTE AND COMMENTS

Approved by the American Bar Association
Miami, Florida, February 14, 1995

4/18/95
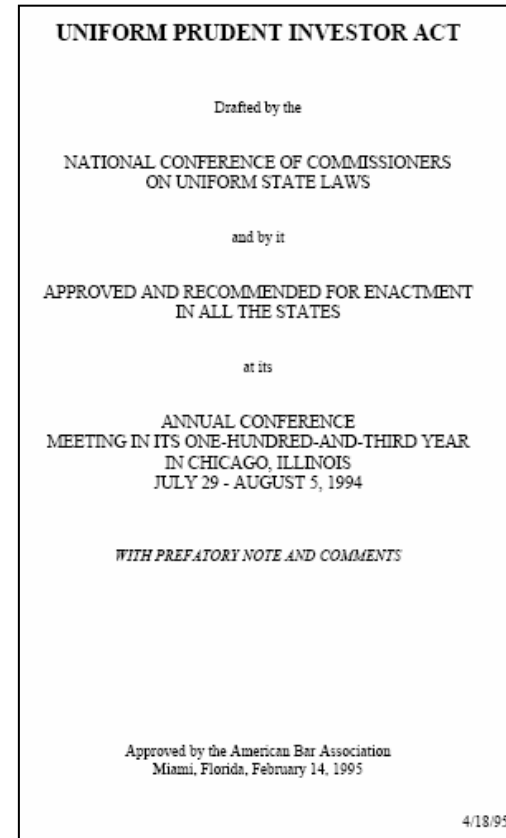
The "Octopus:" 1994 Uniform Prudent Investor Act

The tentacles of the Uniform Prudent Investor Act have spread far and wide into the texts of all the following Uniform Acts which govern the conduct of fiduciaries responsible and liable for investing and managing others' money

1997 Uniform Principal and Income Act (UP&IA)

2006 Uniform Prudent Management of Institutional Funds Act (UPMIFA)

UPIA

1997 Uniform Management of Public Employee Retirement Systems Act (UMPERSA)

2000 Uniform Trust Code (UTC)
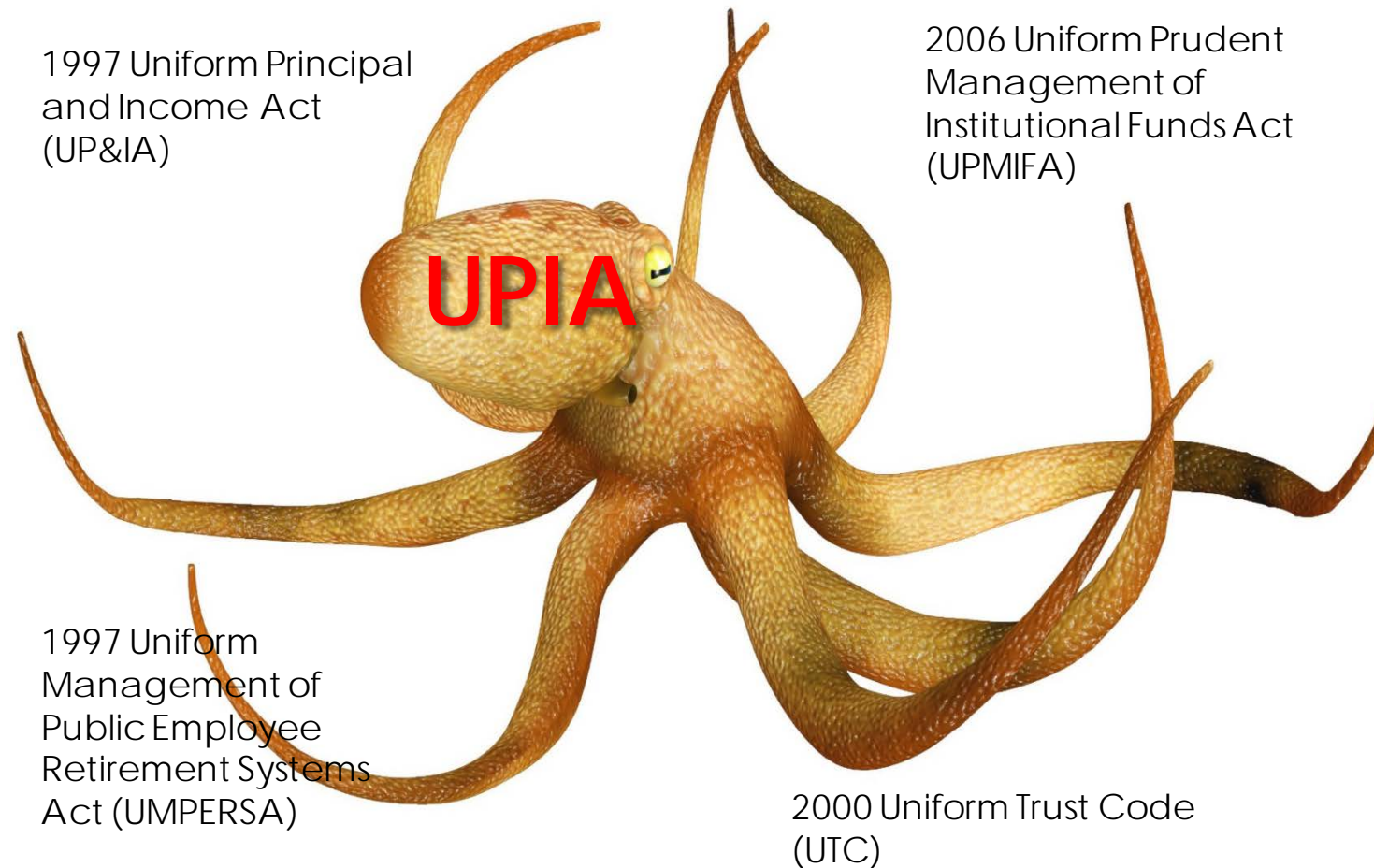
Two Dangers of Ignoring a Portfolio's Uncompensated Risk

- <u>Financial harm</u> to investors such as <u>beneficiaries</u> - whether they're trust fund babies, participants in 401(k) plans or non-profit foundations and endowments

- <u>Legal harm </u>to <u>fiduciaries</u> if they allow their beneficiaries to be financially harmed

Total Portfolio Risk

- The total risk carried by a portfolio of stocks – or a single stock or mutual fund or fixed income investments, for that matter - can be separated into two kinds:

    - Uncompensated risk comprises about 70% of total portfolio risk (virtually all of this kind of risk can be diversified)

    - Compensated risk comprises about 30% (none of this risk can be diversified)

A Portfolio of Low/Negative Covariance Assets Can Virtually Eliminate Uncompensated Risk

- Markowitz found that including stocks in a portfolio that have low or negative covariance to each other allows investors to minimize - or even virtually eliminate - uncompensated risk in a relatively <u>easy and inexpensive way</u>

Fiduciaries Ordinarily Shouldn't Retain Uncompensated Risk in Portfolios Under Their Care

- Because market pricing cannot be expected to recognize and reward a particular investor's failure to diversify [uncompensated] risk, a [fiduciary's] acceptance of this type of risk cannot, without more, be justified on grounds of enhancing expected return.

Section 90 of the Restatement, comment e, page 303

A Fiduciary's Failure to Reasonably Reduce Uncompensated Risk Ordinarily is Imprudent

- Failure to diversify on a reasonable basis in order to reduce uncompensated risk is ordinarily a violation of both the duty of caution and the duties of care and skill.

  - Section 90 of the Restatement, comment e, page 307

- **NOTE:** The three fiduciary duties of <u>caution, care and skill</u> together legally define "prudence"

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Reduce Portfolio Volatility to Minimize Dollar Losses

Portfolio	Value Start of Year 1	Year 1 Return	Year 2 Return	Simple Average Return	Compound Return	Value End of Year 2
1	$10,000	10%	-10%	0%	**-0.50%**	$9,900 ($100 loss) (+1.0%)

Reduce Portfolio Volatility to Minimize Dollar Losses

Portfolio	Value Start of Year 1	Year 1 Return	Year 2 Return	Simple Average Return	Compound Return	Value End of Year 2
1	$10,000	10%	-10%	0%	**-0.50%**	$9,900 ($100 loss) (+1.0%)
2	$10,000	30%	-30%	0%	**-4.60%**	$9,100 ($900 loss) (+9.9%)

Reduce Portfolio Volatility to Minimize Dollar Losses

Portfolio	Value Start of Year 1	Year 1 Return	Year 2 Return	Simple Average Return	Compound Return	Value End of Year 2
1	$10,000	10%	-10%	0%	**-0.50%**	$9,900 ($100 loss) (+1.0%)
2	$10,000	30%	-30%	0%	**-4.60%**	$9,100 ($900 loss) (+9.9%)
3	$10,000	50%	-50%	0%	**-13.40%**	$7,500 ($2,500 loss) (+33.3%)

Linear Differences Between Volatility Percentages Can Generate Exponential Differences in Dollar Values

- The volatility percentages - 10%, 30% and 50% - of the three portfolios impacted their dollar values - losses of $100, $900 and $2,500

- The volatility percentages of the portfolios grew 5-fold: from 10% to 50%

- The dollar losses grew 25-fold: from $100 to $2,500

Unlike Uncompensated Risk, a Fiduciary Ordinarily Has No Duty to Diversify and Reduce Compensated Risk

- …[Compensated risk is] generally compensated through market pricing, so that the expected return from an investment or portfolio is directly affected by the level of [compensated risk] that cannot be diversified away…Accordingly, a [fiduciary's] duty of prudent investing normally calls for reasonable efforts to reduce [uncompensated risk], while no such generalization can be made with respect to [compensated] risk.

  - Section 90 of the Restatement, comment g, page 310

Leaving Return – Dollars – on the Table Ordinarily is Imprudent Fiduciary Conduct

- The failure of fiduciaries to minimize the uncompensated risk in portfolios unnecessarily leaves investment return on the table. This failure – which translates into unnecessary loss of dollars for beneficiaries - ordinarily is imprudent fiduciary conduct

Markowitz's Notion of Diversification is the Only Known "Free Lunch" in All of Investing

- One of the central findings of Modern Portfolio Theory [is] that … huge and essentially costless gains [can be obtained from] diversifying [a] portfolio thoroughly [by minimizing uncompensated risk].

    - John H. Langbein, Reporter for the Uniform Prudent Investor Act and Sterling Professor of Law and Legal History at Yale Law School

Broadly and Deeply Diversified Portfolios Efficiently Reduce (Uncompensated) Risk

- The best way to dine on this free lunch is to invest in a portfolio that's both:

  – <u>Broadly diversified</u> across----------------------- the asset classes in which the portfolio is invested and

  – <u>Deeply diversified</u> within each such asset class

- This kind of diversification is the most effective and efficient way to virtually eliminate a portfolio's uncompensated risk

Quantity and Quality Factors Involved in Portfolio Diversification

- Quantity

  - "… effective diversification depends not only on the <u>number of assets</u> in a … portfolio but also on <u>the ways and degrees in which their responses to economic events tend to cancel or neutralize one another</u>"

    - Section 90 of the Restatement, comment g, page 310

- Quality

  - "…a <u>portfolio's risk</u> is <u>less than the weighted average</u> of the risk of its individual holdings"

    - Section 90 of the Restatement, comment g, page 310

Speculation vs. Investing

Focus on Return Only = Speculation

Focus on Risk = Investing

A person that invests in those stocks thought to produce maximum expected returns - **without taking risk into account** - is a speculator, not an investor

Speculative Investing vs. Prudent Investing

- SPECULATIVE INVESTING

  – Focuses on increasing return - a factor over which no investor has control

  – Typical result: lower returns due to higher costs and under-diversification of risk

- PRUDENT INVESTING

  – Focuses on determining the risk/return tradeoff of a portfolio, as well as decreasing its costs and risks – factors over which investors have control

  – Typical result: higher returns due to lower costs plus lower uncompensated risk due to broad and deep diversification

An Investment Fiduciary Cannot Be a Speculator!

Part II – The Regulatory Impact of Diversification Issues on CPAs

Presenter: Shane Barry, VP Government Relations MICPA

Personal Financial Planning Section Tax | Retirement | Estate | Risk Management | Investments

Shane Barry

Background:

Shane is the Vice President of Government Relations of the Michigan Association of CPAs. He is an expert in state regulatory, licensing and taxation issues, and is responsible for resolving governmental and licensing problems on behalf of the 19,000 plus members of the MICPA. Those responsibilities encompass working closely with the Department of Licensing and Regulatory Affairs (LARA), the Michigan state legislature, Michigan Department of Treasury, and the Unemployment Insurance Agency (UIA). In addition to his intra-Michigan responsibilities, he also works on inter-state issues with the AICPA and NASBA regarding regulatory, licensing and ethical considerations that apply to CPAs across state lines. Prior to his employment with the MICPA, he was a staff member to the Michigan House of Representatives.

Education:
B.A. Economics, Michigan State University (2011)
Other activities:
Board member, Ronald McDonald House Charities of Detroit.

AICPA Code of Professional Conduct adoption

Legend:
- States that have **adopted** the AICPA Code of Professional Conduct
- States that have **partially adopted** the AICPA Code of Professional Conduct
- States with active legislation/regulation to adopt the AICPA Code of Professional Conduct
- States that have **not adopted** the AICPA Code of Professional Conduct
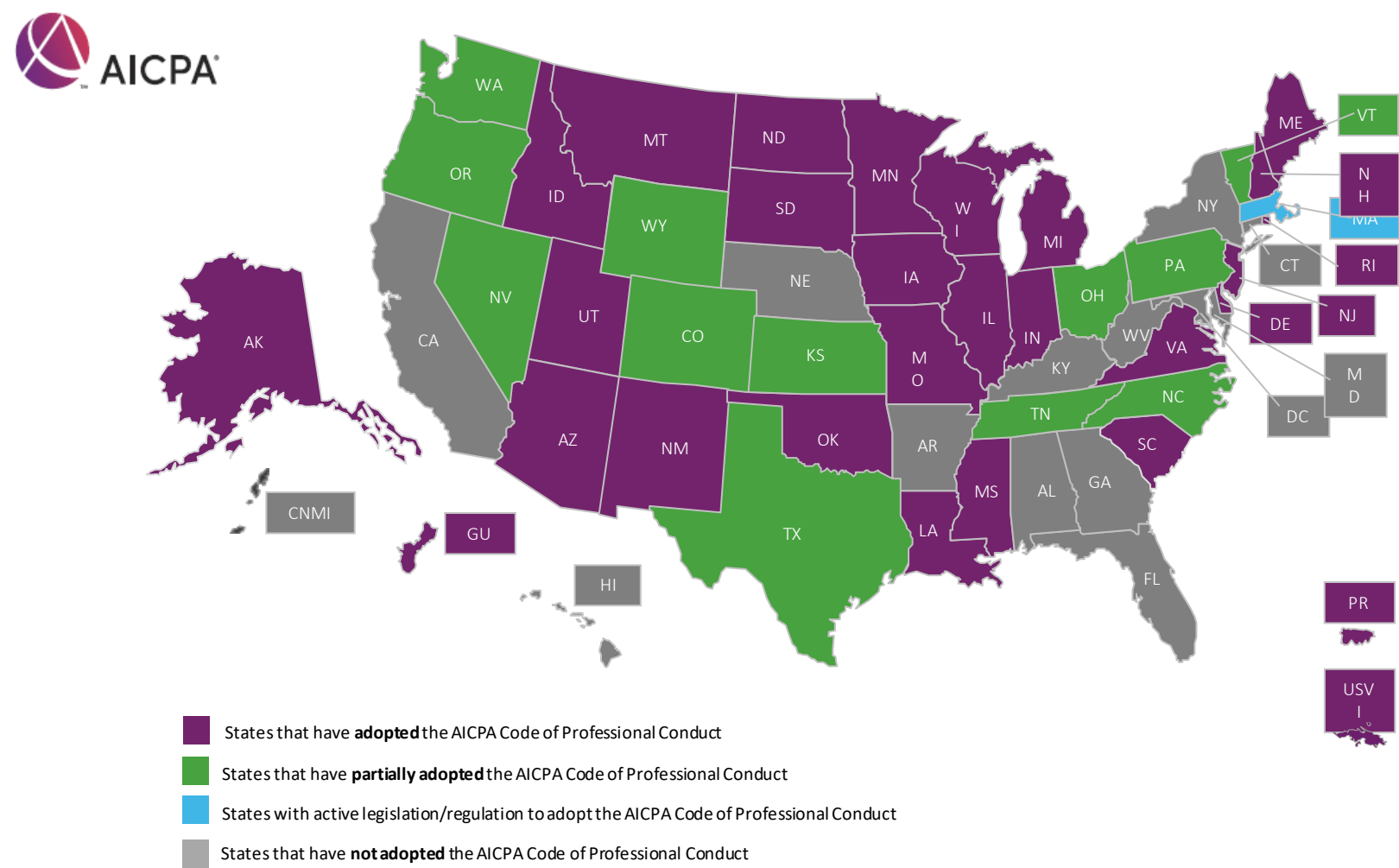
State Laws & AICPA Code

- 28/55 licensing jurisdictions fully incorporate the AICPA Code of Professional Conduct

- When enacted in statute or through a promulgated rule set, the code references have the effect of law

- Considerations need to be granted to:
  - Integrity and Objectivity
    - Conflicts of Interest
  - Independence (CPAs in Public Practice)
  - Compliance with Standards

- Nonauthoratative FAQs available via aicpa.org/newcode

State Laws & AICPA Code

- Uncompensated risks

  - Failure to remove is a violation of the fiduciary rules under state laws.

  - Failure to adhere to that is a violation of the code.

  - Becomes of a violation of the administrative rules and thus could cause a fine, citation, or worse, a loss of licensure.

Part III – Real World Examples of Value Added by CPAs Using Diversification Management

Presenter: J Ben Vernazza, CPA/PFS, TEP (UK), Emeritus

Background:
 J Ben Vernazza, CPA/PFS, TEP (UK) Emeritus is a Co-founder of Precision Fiduciary Analytics, Inc. (PFA), a fiduciary consulting firm that utilizes algorithms and big data to solve diversification and uncompensated risk problems. He is a recognized expert in the areas fiduciary diversification and uncompensated risk management. Ben has been a CPA for 58 years and was an investment adviser for 40 years.

He served four-year terms on the following AICPA committees: Investment Committee, International Tax Committee (2 terms), PFP Practice Committee, and was Chair of the AICPA Task Force on International Tax Reporting. Ben also served on the Asset Protection Committee of the ABA.

Education:
B.A. Economics, Stanford University
M.A. Economics, Stanford University

Professional License and Accreditations:
Certified Public Accountant (Emeritus) - State of California
Personal Financial Specialist – AICPA
Society of Trust & Estate Practioners – United Kingdom

Awards & Commendations
Private Sector Initiative Commendation from President Ronald Reagan, 1984
Wright Bros Master Pilot Award from FAA, 2012

Contact Information:
Company website: https://precisionfiduciary.com/
Email: benv@cpa.com
Direct: 831-239-6000

"Devil is in the Details" Three part portfolio approximately equal portions

1-$330 Million Hospital Endowment - SCREENING

Performance of Three Investment (?) Portfolios
For the 1-Year Period Ended, June 30, 2015

Risk/Reward Scatter Plot
1-Year Ended June 30, 2015

Period Returns / Annualized Standard Deviation

Indices & Portfolios:	Benchmark S&P 500	Blended Benchmark S&P 70% AGG 30%	Securities Only Portfolio	Securities & Farmland Portfolio	Global Portfolio

a) <u>Private Equity Investment:</u> Health related and company supplies necessary equipment, supplies and support for hospital's main specialty. This means it should be part of the Hospitals Operating P & L and not part of the IPS.

b) <u>Farm Land:</u> Some donor restricted, some substandard farm land, some unprofitable. Suggestion is to have a land expert review all holdings and evaluate for potential sales, permission to lift restricted gifts. Should be part of the IPS.

c) <u>Investment Portfolio:</u> Managed by the CFO. One-half in fixed income securities; one-half in equity investments. Part of the IPS. <u>Portfolio has a significant amount of Uncompensated Risk.</u> Procedural process should be part of the IPS. Proposal made for assistance.

d) <u>CFO fired.</u>

e) TAKEAWAYS: Investments (private equity in this case) can be deleted as a diversification factor if properly described in a written explanation within the IPS. Additionally, expect to find other significant facts with potential money making possibilities (farm land). Finally, the investment portfolio on its own needs remediation of too much Uncompensated Risk and must be coordinated with the farm land in mind. Additionally, auditors may need to consider situations like this due to current discussions about "Critical Audit Matters!"

2-$40 Million SCREENING of Volatility 1st Qtr. 2018

Comparative Risk / Return Analysis – 3 Months Ended, March 31, 2018

Risk/Reward Scatter
1st Quarter Ended March 31, 2018

Color Code Explanation	FTSE ALL Cap Global Index	MACRO Allocation	Actual Portfolio	Reasonable Portfolio
Asset Allocation Data				
Combined Foreign & Domestic Equities	100.0%	72.8%	72.4%	74.1%
Fixed Income & Cash	-	27.2%	27.6%	25.9%
TOTALS	100.0%	100.0%	100.0%	100.0%
Portfolio Metrics				
Correlation	1.00	1.00	0.99	0.96
R-Squared	1.00	1.00	0.99	0.93
Portfolio Beta to Risk Assets	1.00	0.73	0.69	0.71
Portfolio Beta to MACRO Allocation Portfolio	N/A	N/A	1.03	0.97
Portfolio Alpha to MACRO Portfolio	N/A	N/A	0.01%	0.48%
Risk/Return Data (Compensated Risk Measurements)				
Period Return - Gross of Fees	-0.85%	-0.54%	-0.23%	0.29%
Period Fees (Estimated)	N/A	N/A	-0.33%	-0.13%
Period Return - Net of Fees	-0.85%	-0.54%	-0.56%	0.17%
Standard Deviation	17.85%	12.88%	13.31%	12.97%
Sharpe Ratio	-0.1865	-0.1619	-0.0678	0.0877
Maximum Drawdown	10.22%	7.53%	8.21%	7.52%
Largest 1-Day Loss	-3.92%	-2.86%	-2.95%	-2.51%

2 – INFO & TAKEAWAYS
FIRST QUARTER OF 2018 WAS FIRST PERIOD OF VOLATILITY IN YEARS.

a) Earlier client's CPA requested evaluation for the 12 months ending 9/30/17 and then requested this subsequent evaluation. Plots were net of fees!

b) Portfolio had over 500 individual securities but still below benchmark, but considered prudently diversified.

c) Potential gains higher for uncompensated risk removal with only 85 securities and same risk.

d) In the process we found that the fees were excessive in our view. The portfolio was 2/3 equity and 1/3 fixed income and the fees were 1.3%/yr. of assets under management.

e) CPA recommended negotiation of the fee schedule.

f) **TAKEAWAY:** CPAs not involved in financial or wealth management can be involved in doing Portfolio Diversification Screenings for clients without the necessity to be registered.

3-$2mil SCREENING EQUITY SPLIT 2 ADVISORS

PRECISION FIDUCIARY ANALYTICS

Comparative Risk / Return Analysis For the 1-Year Period Ended on June 30, 2018

Risk/Reward Scatter
1-Year Ended June 30, 2018

Indices & Portfolios: Total World Stock Index | Advisor - I Portfolio I | Advisor - II Portfolio | Combined Portfolios I&II | Maximum UCR Reduction
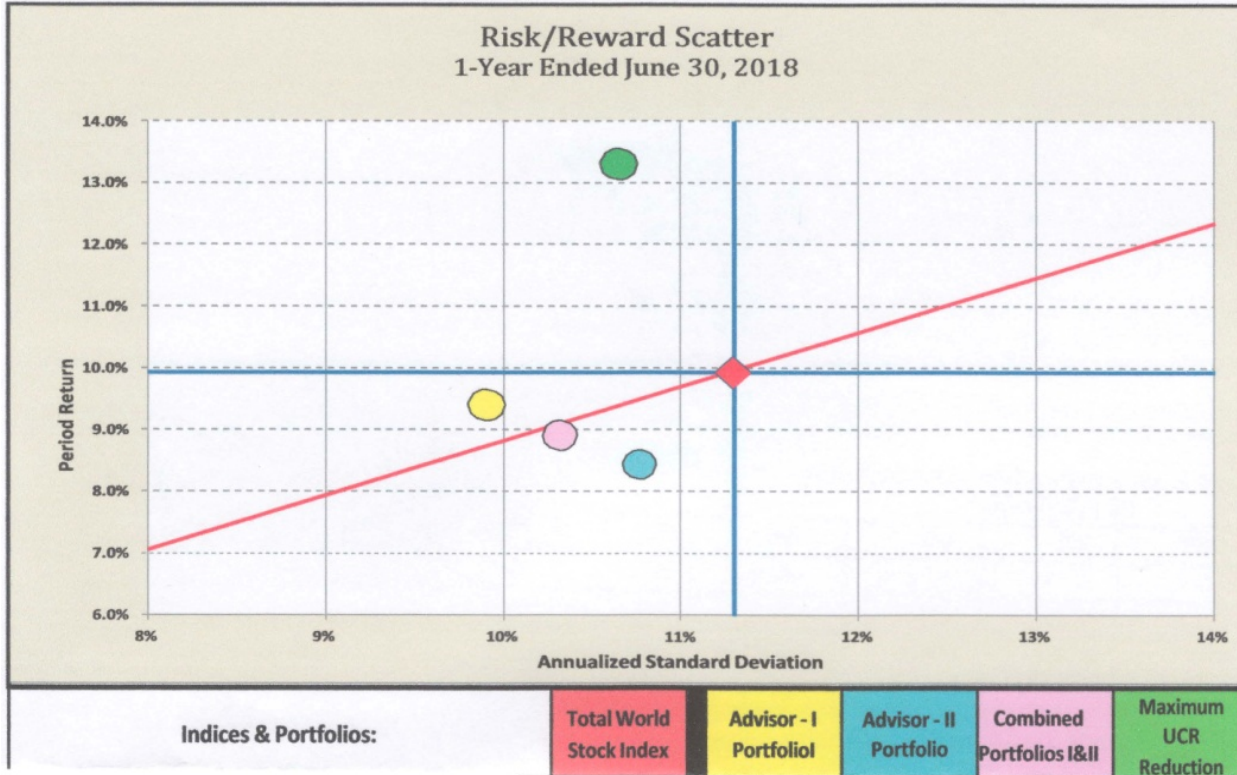
3 – INFO & TAKEAWAYS FIDUCIARY IN BREACH?

a) Started out with our vetting questionnaire aide for the fiduciary to have each potential adviser complete, after which those left (2) would be requested to prepared an asset allocation of how they would invest the funds which we would evaluate.

b) Advisers complete vetting questionnaire. Then lawyer tells fiduciary that they can diversify by splitting the portfolio between the two and negotiates both at the same per cent AUM and lets them mange it the best they can based on the overall established ROR goals.

c) When this is transmitted to us we tell the fiduciary that this could be a breach of their fiduciary responsibility regarding the duty of caution and the duties of care and skill.

d) Also, and not shared with client, could lawyer be exchanging referral favors? Hmmm.

e) Engagement was terminated.

f) **TAKEAWAY:** When one is involved with clients that may be skating the rules one must advise the client. If nothing changes then the CPA must withdraw. There is nothing wrong in a large portfolio with delegating portions representing difference sectors utilizing their duties of care and skill by choosing more qualified advisers for each sector which should include diversification within the sector and all being defined in the IPS.

GOOD EXAMPLE OF ELDER CARE BY A 'STOCK PICKER' ADVISER WITHOUT CONSIDERING RISK.

4-$1 Million Fiduciary Trustee

Comparative Risk / Return Analysis

1-Year Period Ending June 30, 2018

Risk/Reward Scatter
1-Year Ended June 30, 2018

Period Return

Annualized Standard Deviation

Indices & Portfolios:

FTSE ALL Cap Global Index	MACRO Allocation	Existing Equity Portfolio	Max UCR "Reasonable" Portfolio	Uncon-strained Max UCR E-W Po

a) Commissions were typical for some broker dealers, e.g. over $1,000 for changes selling and buying five different securities and replacements - About 1 ¼ % of value bought and sold.

b) The broker was a long-time friend of the trustee and beneficiaries which made the decision for terminating the broker difficult. They all knew each other in a service organization.

c) The trustee was acting for a 77 year old married couple with a married adult child both with emotional and psychological disabilities.

d) In addition to this $750,000 portfolio there was variable annuity of about the same amount which is another story for another time (with very interesting positive results).

e) The recommendation was to transfer the securities (an IRA) to a discount brokerage account, sell all the securities (100% were in equities), place the funds in 2-3 year treasuries, and assist the trustee in vetting fee-only advisers. Securities were sold before the December fall out.

f) **TAKEAWAY**: CPAs not in financial planning or wealth management should be aware and assist elders when one's forensic juices start flowing. As previously mentioned CPAs can do diversification screening and vetting of investment advisers without registering as RIAs.

5-RIA:Highly Correlated Portfolio 10 Funds

Downside Risk/Return Scatter For the 1-Year Ended December 31, 2018
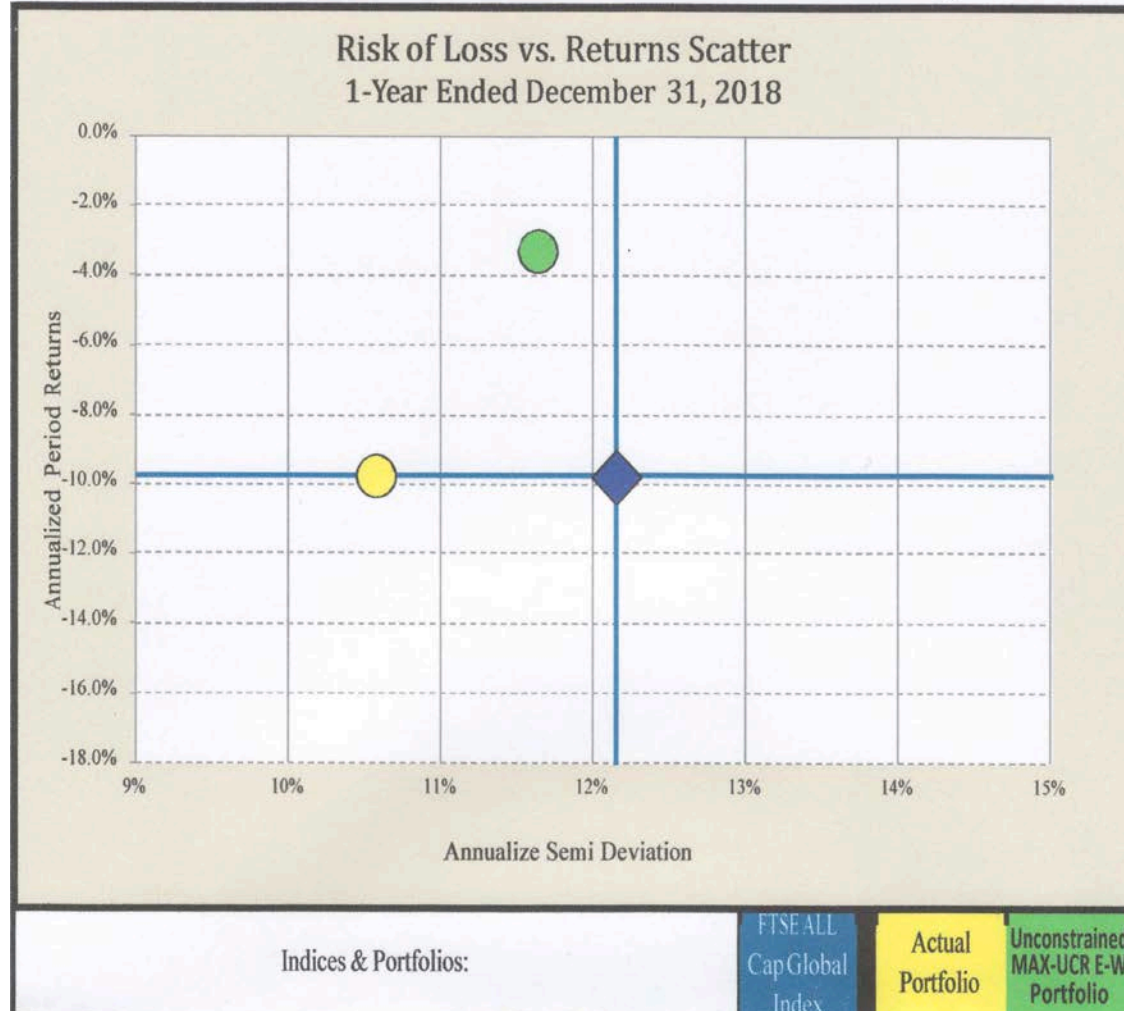
Risk of Loss vs. Returns Scatter
1-Year Ended December 31, 2018

Indices & Portfolios:
FTSE ALL Cap Global Index | Actual Portfolio | Unconstrained MAX-UCR E-W Portfolio

a) Highly correlated portfolio with only ten mutual funds.

b) BUT 67% of the Uncompensated Risk still remained in the portfolio.

c) It is estimated that a at least 3-4% improvement in ROR could have been achieved with some reduction of Uncompensated Risk, and with an increase in semi-deviation of only 1%, leaving 40% Uncompensated Risk in the portfolio.

d) Adviser refused to believe she was not diversified. That was a result of thinking she had literally thousands of companies imbedded in her ten funds. Also her formidable low risk accomplishment benchmark returns gave her confidence. Finally, she cited a research paper by the fund family she used entitled *"Breaking the Link: Correlation Is Not Diversification."*

e) **TAKEAWAY:** CPAs can get involved in Diversification Screening and vetting of potential financial advisers without being RIAs. Scott and Stewart have shown that CPA-RIAs have tremendous advantages in reducing Uncompensated Risk. Not accepting this is like LEAVING MONEY ON THE TABLE plus potentially BEING IN BREACH. This is the purpose of this webcast: *Education through Understanding along with practice opportuni*ties.

6-RIA High Correlation & High Volatility

Comparative Risk / Return Trade-off For The 1-Year Period Ended on March 31, 2019

PRECISION
FIDUCIARY
ANALYTICS

Risk of Loss vs. Returns Scatter
1-Year Ended March 31, 2019

Un-Compensated Risk Measurement Data

| Unconstrained Max UCR E-W Portfolio | Client & E-W ETF Portfolio | Client & PFA Blended Portfolio | ReBalanced Portfolio |
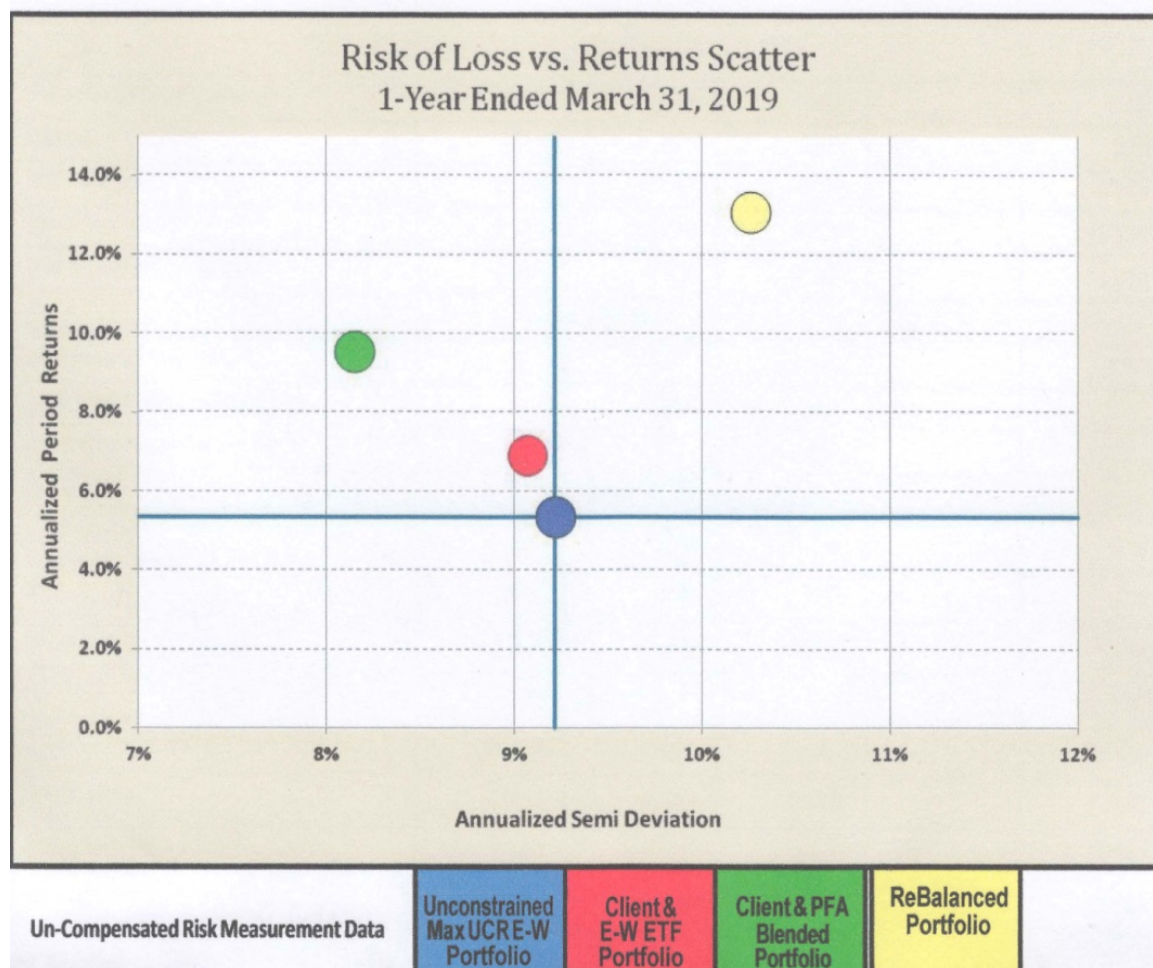
a) Outstanding return with much higher volatility. Only nine mutual funds/ETFs.

b) The portfolio had eliminated only 19% Uncompensated Risk – 81% remains.

c) Portfolio if held could result in large future losses during uncertain times.

d) The "Blended Portfolio" was an optimized portfolio consisting of 5% Cash and 33.25% of the pro-rata value of AGG's equity holdings as of March 31, 2018 combined with 29 ETFs using PFA's diversification algorithm. This left only 28% of Uncompensated Risk left.

e) The blended results are not a recommendation but an illustration. A recommendation might be a mix that brings the return closer to the actual portfolio return, but has a semi-deviation no greater than the benchmark.

f) TAKEAWAY: Financial Advisers need to prudently reduce Uncompensated Risk. This RIA showed interest in utilizing our on-line Portfolio Analyzer and Optimizer as a way to prudently optimize Uncompensated Risk reduction by adding appropriate securities and gaining a higher than benchmark ROR with much lower risk and being in compliance.

7-California Public Pension Plan Study Findings

An unconstrained optimization was presented to help the 5 boards understand *how bad!* *in breach of their fiduciary duty to diversify they are and how much money they are* *leaving on the table as a result*. The answer rests within the range of lost diversification.

County Retirement Boards	Range of Lost Diversification "Alpha"	
	Lower End	Upper End
Fresno	$ 7.8 Million	$ 44.3 Million
Imperial	$ 2.6 Million	$ 8.5 Million
Mendocino	$ 1.6 Million	$ 4.7 Million
Merced	$ 2.9 Million	$ 7.8 Million
Tulare	$ 5.2 Million	$ 14.1 Million

CalPERS   **$ 1.2 Billion**   **$ 3.6 Billion**

Based on the knowledge gained from the 5 County Study and our review of CalPERS overall asset allocation and actual rate of return during the same period we have presumed, with high confidence, that *CalPERS had also failed the same test* http://precisionfiduciary.com/5county/ and http://precisionfiduciary.com/calpers5county/
http://precisionfiduciary.com/calpers-breach/
http://precisionfiduciary.com/breach2018/

7 – INFO & TAKEAWAYS
WE USED PUBLIC PENSION PLANS
BECAUSE THEIR DATA TRANSPARENCY

a) These studies of California Public Pension Plans were the basis of testing the various academic studies of past years. There were few data tests of entities all the years since the 1992 Restatement of Trusts 3rd because we did not have Big Math.

b) Additionally, we used public pension plans because of their data transparency which we would have difficulty gathering in the private sector.

c) **TAKEAWAYS:** The links are there for you to further educate yourself. Additionally, you may want to see all our many resources and studies by going to: http://precisionfiduciary.com/resources/

8-IS THIS PORTFOLIO REASONABLY DIVERSIFIED?

PRECISION FIDUCIARY ANALYTICS

Risk/Reward Scatter
1-Year Ended September 30, 2018

Indices & Portfolios: FTSE ALL Cap Global Index | MACRO Allocation | Actual Portfolio | Maximum UCR Reduction
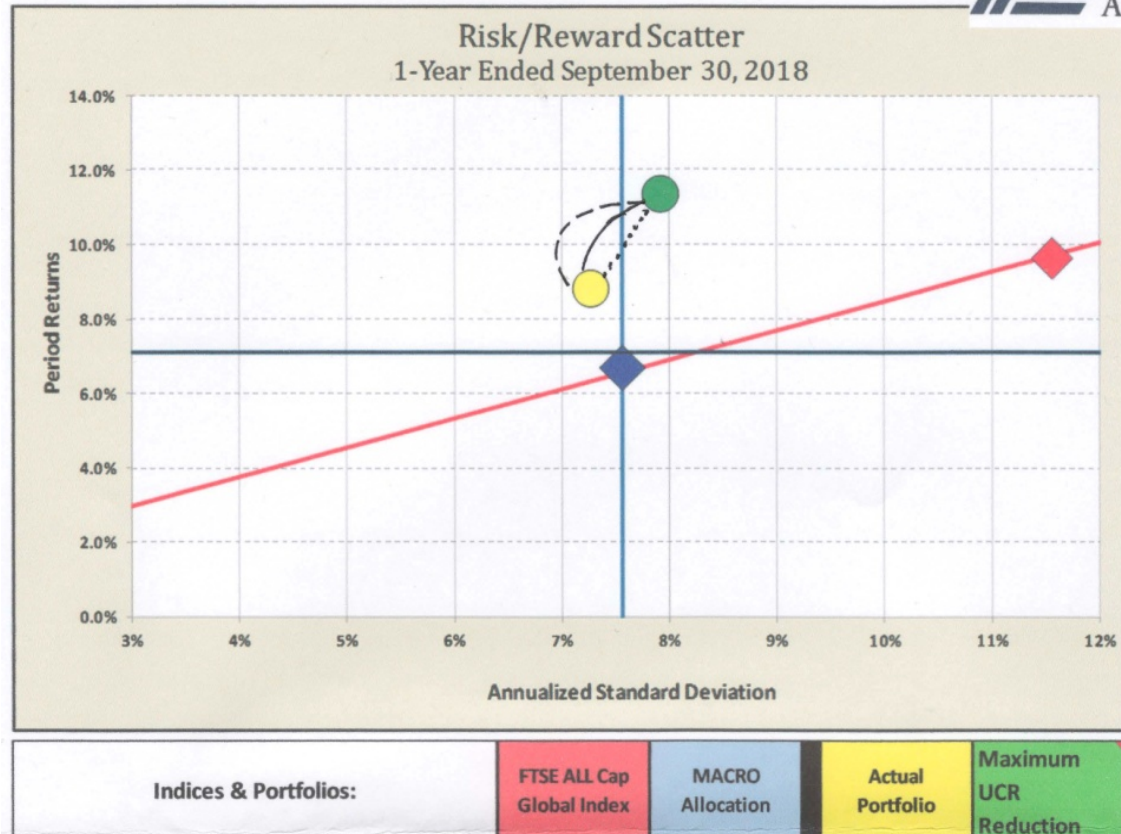
8 – INFO & TAKEAWAYS
IS THIS PORTFOLIO
REASONABLY DIVERSIFIED?

a) The answer is a tough one from a scatter chart viewpoint because this fairly large RIA firm got their return/risk ratio into the northwest quadrant which has been normally described as a "safe harbor" for investment advisers.

b) However, this portfolio still has left 84% of the Uncompensated Risk imbedded in it, and

c) For that reason there is a big opportunity!

d) Refer to the chart. The dotted line is not our experience in improving Uncompensated Risk removal. Rather, it is the solid line, BUT

e) In this particular case we would expect to see the dashed line path because there is so much uncompensated risk still in the portfolio the optimizing algorithm would canvass all available securities and first pick the ones with low correlation/low volatility/higher Sharpe Ratios. Eventually it runs out of higher returns and the path of the dashed line turns towards the maximum UCR reduction risk return.

f) So, in this case it looks like we can take a lower risk than the actual portfolio by stopping somewhere around a 10% ROR (a potential gain of 2 percentage points) with a reduction of ¾ of 1% in risk. This puts the expected results further northwest in the scatter chart.

g) From a technician's view (ours) the current portfolio it is not diversified. From a legal standpoint it might be difficult for a plaintiff to prove a breach with the current portfolio in the so called "safe haven" northwest quadrant and especially if past years were also 'safe'.

h) **TAKEWAYS:** The main point is many investment advisers are leaving significant amounts of money on the table that could easily be avoided by prudently and reasonably removing some significant portion of the Uncompensated Risk.

Part IV – Documenting the Management of Uncompensated Risk & Diversification

Presenter: Stewart Frank, CPA/PFS, AIFA®

Stewart Frank

Background:
Stewart Frank, CPA/PFS, AIFA is the CEO and Co-founder of Precision Fiduciary Analytics, Inc. (PFA), a fiduciary consulting firm that utilizes algorithms and big data to solve diversification and uncompensated risk problems. He is a recognized Subject Matter Expert in the areas fiduciary diversification and uncompensated risk management. He is a practicing CPA specializing in the area of investment fiduciary compliance and has provided expert opinions in over 40 breach of fiduciary cases. In 2013 he contributed content used in two handbooks on fiduciary best practices, published by FI360 and served on the AICPA task force that performed a technical edit of the handbooks. More recently, he served as a the lead consultant on Fiduciary Matters to that AICPA's Fiduciary Task Force of the PFP Executive Committee during their technical review of the 2019 update to the 2013 handbooks. His expertise was relied upon as the basis for making extensive changes to the handbook's material concerning uncompensated risk and diversification.

Education:
   B.B.A. Ross School of Business, University of Michigan

Professional License and Accreditations:
   Certified Public Accountant - State of Michigan
   Personal Financial Specialist - AICPA
   Accredited Investment Fiduciary Analyst – Center for Fiduciary Studies (fi360)

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Diversification Knowledge Timeline
Up to 2004

✓ *Evans & Archer (1968)* – determined uncompensated risk reduction is measured by the variance of a single asset to the variance of a portfolio with increasingly more securities.

✓ *Elton & Gruber (1977)* – a portfolio with 15 equally weighted securities has 32% more risk and a portfolio with 60 equally weighted securities has 20% more risk than a portfolio with100-equally weighted securities.

✓ *Statman (1987)* – investors should hold 40 securities (sans leverage).

✓ *Markowitz (1991)* - "To reduce risk, it is necessary to avoid a portfolio whose securities are all highly correlated with each other."

✓ Restatement of Trusts 3d: Prudent Investor Rule (1992) – is promulgated by A*merican Law Institute.*

✓ *Fama and Booth (1992)* – in Diversification Returns and Asset Contributions, coin the term "diversification returns," representing additional return realized (i.e. diversification Alpha) in a portfolio because of diversification.

✓ *Cleary & Copp (1993*) – quantified the number of equally weighted securities required to reduce various percentages of uncompensated risk. a 65% reduction requires 30; a 90% reduction requires 50; a 95% reduction requires 100; and a 99% reduction requires 200.

Diversification Knowledge Timeline
Up to 2004

- Newbould & Poon (1993, 1996) – concluded a portfolio must exceed 100-securities in order to be within 5% of the average market return and 20% of the average market risk.

- Uniform Prudent Investor Act (1994) – is promulgated by National Conference of Commissioners on Uniform State Laws and recommends its adoption in all states.

- Domian, Louton and Racine (2003) - over 60 stocks needed to avoid a significant shortfall risk.

- Statman (2004) – 300 securities are required before the marginal benefit is equal to the marginal cost of diversification.

- Brandes Institute (2004) – develops Concentration Coefficient ("CC") that expresses portfolio concentration as the equivalent number of equally-weighted stocks.

Commentary to Restatement 3rd Trusts Raises 2 Essential Questions

"Failure to diversify on a reasonable basis in order to reduce uncompensated risk is ordinarily a violation of both the duty of caution and the duties of care and skill"

Source: Commentary to Sec 90 (Formerly Sec. 227), Restatement 3rd of Trusts

1. **What constitutes "Failure to diversify on a Reasonable Basis"?**
2. **How is Uncompensated Risk determined?**

What constitutes "Failure to diversify on a Reasonable Basis"?

❑ "Reasonable Basis" is a flexible standard.

❑ It does not rely on a fixed number of diversifying asset resources.

❑ It implies that diversification should be continuously increased until marginal costs equal marginal gains.

❑ It allows for changes in transaction and other costs to dictate number of assets.

❑ It allows portfolio size to dictate number of assets.

❑ It requires setting diversification objectives through IPS that are established through risk/return tradeoff considerations.

Restatement 3rd Trusts Mathematically Defines Uncompensated Risk in Terms of Quantity & Quality Factors

Quantity

"… effective diversification depends not only on the **number of assets** in a … portfolio but also on **the ways and degrees in which their responses to economic events tend to cancel or neutralize one another."**
Source: Section 90 of the Restatement, comment g, page 310

Quality

"…a portfolio's *risk* is less than the weighted average of the risk of its individual holdings."
Source: Section 90 of the Restatement, comment g, page 310

Quantity Measurement Requires 3 Steps

<u>Quantity</u>

"… effective diversification depends not only on the **number of assets** in a … portfolio but also on **the ways and degrees in which their responses to economic events tend to cancel or neutralize one another.**"

DIVERSIFICATION SCOREBOARD		
SCIENTIFIC NAMES	DESCRIPTIVE NAMES	COMMON NAMES
AMBIENT PORTFOLIO DIMENSIONALITY	TOTAL NUMBER OF RISK ASSETS	**COUNT**
SPANNING PORTFOLIO DIMENSIONALITY	TOTAL NUMBER OF RISK ASSET RESOURCES IF EQUALLY WEIGHTED	**CONCENTRATION**
INTRINSIC PORTFOLIO DIMENSIONALITY	NUMBER OF DIVERSIFIABLE ASSET RESOURCES	**COMMONALITY**

Diversifiable Asset Resources In S&P 500

<u>Quantity</u>

"… effective diversification depends not only on the **number of assets** in a … portfolio but also on **the ways and degrees in which their responses to economic events tend to cancel or neutralize one another.**"

DIVERSIFICATION SCOREBOARD			
SCIENTIFIC NAMES	DESCRIPTIVE NAMES	COMMON NAMES	**S&P 500 INDEX**
AMBIENT PORTFOLIO DIMENSIONALITY	TOTAL NUMBER OF RISK ASSETS	**COUNT**	**500.0**
SPANNING PORTFOLIO DIMENSIONALITY	TOTAL NUMBER OF RISK ASSET RESOURCES IF EQUALLY WEIGHTED	**CONCENTRATION**	**194.0**
INTRINSIC PORTFOLIO DIMENSIONALITY	NUMBER OF DIVERSIFIABLE ASSET RESOURCES	**COMMONALITY**	**21.5**

1. Number of Assets

P&F DB Retirement Fund (TOTAL PORTFOLIO $140 Million) 4/1/2018 - 3/31/2019				
Asset			**3/31/2018**	
#	**Symbol**	**Name**	**Allocation**	**Assets**
1	IWN	iShares Russell 2000 Value Index Fund	8.00%	$ 5,600,000
2	IWP	iShares Russell MidCap Growth Fund	9.50%	$ 6,650,000
3	ACWX	iShares MSCI ACWI ex US Index Fund	11.25%	$ 7,875,000
4	VONG	Vanguard Russell 1000 Growth ETF	12.00%	$ 8,400,000
5	IVE	iShares S&P 500 Value Index Fund	12.50%	$ 8,750,000
6	VOO	VANGUARD FIVE HUNDRED INDEX	35.00%	$ 24,500,000
7	VEA	Vanguard Europe Pacific ETF	11.75%	$ 8,225,000
		Totals	**100.00%**	**$ 70,000,000**

❑ Our explanatory portfolio is the equity only portion from a small city's Police & Fire Fighter's DB Pension Plan holding total assets of approx. $140 million, with 50% allocated to equities.

❑ By using only risk assets the "Compensated" risk /asset allocation factor is eliminated from the portfolio's total risk evaluation, leaving only "Uncompensated" risk / diversification.

Quantity Scoreboard – Updated for Total

<u>Quantity</u>

"… effective diversification depends not only on the **number of assets** in a … portfolio but also on **the ways and degrees in which their responses to economic events tend to cancel or neutralize one another."**

DIVERSIFICATION SCOREBOARD			
SCIENTIFIC NAMES	DESCRIPTIVE NAMES	COMMON NAMES	**P&F DB PLAN**
AMBIENT PORTFOLIO DIMENSIONALITY	TOTAL NUMBER OF RISK ASSETS	**COUNT**	**7.0**
SPANNING PORTFOLIO DIMENSIONALITY	TOTAL NUMBER OF RISK ASSET RESOURCES IF EQUALLY WEIGHTED	**CONCENTRATION**	
INTRINSIC PORTFOLIO DIMENSIONALITY	NUMBER OF DIVERSIFIABLE ASSET RESOURCES	**COMMONALITY**	

Concentration Coefficient (CC) Measures the Weighting Element, Only, of Uncompensated Risk

❑ CC measures a portfolio's concentration in terms of the number of assets held and their respective weightings, but not their uniqueness.

❑ It restates a portfolio's holdings as an equivalent number of equally weighted assets accounting for the significance of the weightings to a portfolio's diversification.

❑ CC allows academic discoveries, based on equal weighting, to be applied to analyzing diversification in real world portfolios.

❑ Making CC an essential tool in diversification measurement.

Calculate Coefficient of Concentration (CC)

P&F DB Retirement Fund (Equities Only) ($70 Million)
4/1/2018 - 3/31/2019

		Asset	3/31/2018	
#	Symbol	Name	Allocation	CC
1	IWN	iShares Russell 2000 Value Index Fund	8.00%	0.64%
2	IWP	iShares Russell MidCap Growth Fund	9.50%	0.90%
3	ACWX	iShares MSCI ACWI ex US Index Fund	11.25%	1.27%
4	VONG	Vanguard Russell 1000 Growth ETF	12.00%	1.44%
5	IVE	iShares S&P 500 Value Index Fund	12.50%	1.56%
6	VOO	VANGUARD FIVE HUNDRED INDEX	35.00%	12.25%
7	VEA	Vanguard Europe Pacific ETF	11.75%	1.38%
		Totals	100.00%	5.1

INSTRUCTIONS FOR CC

1. Square each allocation %
2. Sum the squared %
3. Divide that sum into 1,
4. = CC metric.

❑ The 5.1 Concentration Coefficient (CC) equals the equivalent number of equally-weighted assets held, but not their uniqueness.

❑ Portfolios of equally weighted assets have the maximum possible CC for their number of assets, and represent the least possible concentration.

❑ Lower CC values indicate increased concentration and less diversification.

Quantity Scoreboard Updated for Coefficient of Concentration

DIVERSIFICATION SCOREBOARD			
SCIENTIFIC NAMES	DESCRIPTIVE NAMES	COMMON NAMES	**P&F DB PLAN**
AMBIENT PORTFOLIO DIMENSIONALITY	TOTAL NUMBER OF RISK ASSETS	**COUNT**	**7.0**
SPANNING PORTFOLIO DIMENSIONALITY	TOTAL NUMBER OF RISK ASSET RESOURCES IF EQUALLY WEIGHTED	**CONCENTRATION**	**5.1**
INTRINSIC PORTFOLIO DIMENSIONALITY	NUMBER OF DIVERSIFIABLE ASSET RESOURCES	**COMMONALITY**	

Importance of the Intrinsic Portfolio Dimensionality Metric

❑   It is the number of a portfolio's Diversifying Asset Resources that possess unique diversification characteristics.

❑   Each intrinsic dimension represents a diversification element having the ability to act or move independently within a portfolio's structure.

❑   The larger the number; the greater the ability of each dimension to perform independently; and to more broadly diversify the portfolio.

❑   Because independent performance is the hallmark of diversification, when used in combination with a portfolio's Quality factors, scientific measurement of uncompensated risk removed from a portfolio is achieved.

Identify Number of Asset Resources that Tend to Neutralize One Another When Responding to Events

P&F DB Retirement Fund (TOTAL PORTFOLIO $140 Million)										
Asset			1	2	3	4	5	6	7	Asset
#	Symbol	Amount	IWN	IWP	ACWX	VONG	IVE	VOO	VEA	Allocation
1	IWN	$ 5,600,000	1	0.86	0.73	0.81	0.87	0.85	0.75	8.00%
2	IWP	$ 6,650,000	0.86	1	0.78	0.96	0.86	0.95	0.78	9.50%
3	ACWX	$ 7,875,000	0.73	0.78	1	0.80	0.79	0.82	0.99	11.25%
4	VONG	$ 8,400,000	0.81	0.96	0.80	1	0.86	0.98	0.80	12.00%
5	IVE	$ 8,750,000	0.87	0.86	0.79	0.86	1	0.94	0.82	12.50%
6	VOO	$ 24,500,000	0.85	0.95	0.82	0.98	0.94	1	0.83	35.00%
7	VEA	$ 8,225,000	0.75	0.78	0.99	0.80	0.82	0.83	1	11.75%
		$ 70,000,000	TOTALS							100.00%
			COEFFICIENT OF CONCENTRATION (CC)							5.1

- ❑ In our example portfolio, when the CC formula is applied to the 7 risk assets the resulting equivalent equally weighted number is 5.1.
- ❑ But CC alone assumes all assets are uncorrelated.
- ❑ Thus weightings alone do not fully define diversification.
- ❑ Weightings of highly correlated assets must be combined to find the true number of asset resources capable of driving diversification.

Direct Peel-Back of Highly Correlated Asset Resources

P&F DB Retirement Fund (TOTAL PORTFOLIO $140 Million)										1st Level Peel		
Asset			**1**	**2**	**3**	**4**	**5**	**6**	**7**			
#	Symbol	Amount	IWN	IWP	ACWX	VONG	IVE	VOO	VEA	Original	Peel	Revised
1	IWN	$ 5,600,000	x							8.00%	-	8.00%
2	IWP	$ -				0.96		0.95		9.50%	-9.50%	-
3	ACWX	$ -							0.99	11.25%	-11.25%	-
4	VONG	$ 11,725,000		0.96				0.98		12.00%	4.75%	16.75%
5	IVE	$ 8,750,000						0.94		12.50%	-	12.50%
6	VOO	$ 27,825,000		0.95		0.98	0.94			35.00%	4.75%	39.75%
7	VEA	$ 16,100,000			0.99					11.75%	11.25%	23.00%
		$ 70,000,000				TOTALS				100.00%	0.00%	100.00%

1. The #3's weighting is peeled back and its allocation is added to #7's.
2. The #2's weighting is peeled back with half its allocation added to #4's and the other half added to #6's.

Indirect Peel-Back of Highly Correlated Asset Resources

P&F DB Retirement Fund (TOTAL PORTFOLIO $140 Million)

	Asset		1	2	3	4	5	6	7	2nd Level Peel		
#	Symbol	Amount	IWN	IWP	ACWX	VONG	IVE	VOO	VEA	Original	Peel	Revised
1	IWN	$ 5,600,000	x							8.00%	-	8.00%
2	IWP	$ -				x		x		-	-	-
3	ACWX	$ -							x	-	-	-
4	VONG	$ 11,725,000		x				x		16.75%	-	16.75%
5	IVE	$ -						0.94		12.50%	-12.50%	-
6	VOO	$ 36,575,000		x		x	0.94			39.75%	12.50%	52.25%
7	VEA	$ 16,100,000			x					23.00%	-	23.00%
		$ 70,000,000				TOTALS				100.00%	0.00%	100.00%

1. Direct peel-back fully offsets all allocations between high correlation assets.
2. Indirect peel-back partially offsets some, but not all, allocations between assets with high correlations (e.g. the #5 to #6 peel-back is "Direct", but the # 5 & #s 2&4 peel back is "Indirect").

Direct & Indirect Peel-Backs of Highly Correlated Asset Resources

			1	2	3	4	5	6	7	Peel Backs		
P&F DB Retirement Fund (TOTAL PORTFOLIO $140 Million)												
Asset			IWN	IWP	ACWX	VONG	IVE	VOO	VEA			
#	**Symbol**	**Amount**	IWN	IWP	ACWX	VONG	IVE	VOO	VEA	**Original**	**Peels 1&2**	**Final**
1	IWN	$ 5,600,000	1	0.86	0.73	0.81	0.87	0.85	0.75	8.00%	-	8.00%
2	IWP	$ -	0.86	1	0.78	0.96	0.86	0.95	0.78	9.50%	-9.50%	-
3	ACWX	$ -	0.73	0.78	1	0.80	0.79	0.82	0.99	11.25%	-11.25%	-
4	VONG	$ 11,725,000	0.81	0.96	0.80	1	0.86	0.98	0.80	12.00%	4.75%	16.75%
5	IVE	$ -	0.87	0.86	0.79	0.86	1	0.94	0.82	12.50%	-12.50%	-
6	VOO	$ 36,575,000	0.85	0.95	0.82	0.98	0.94	1	0.83	35.00%	17.25%	52.25%
7	VEA	$ 16,100,000	0.75	0.78	0.99	0.80	0.82	0.83	1	11.75%	11.25%	23.00%
		$ 70,000,000	TOTALS							100.00%	0.00%	100.00%
		COEFFICIENT OF CONCENTRATION (CC)								5.1	-2.3	2.8

Number of intrinsic dimensions representing diversification elements having the ability to act or move independently within a portfolio's structure.

Quantity Scoreboard Updated for Number of Diversifying Asset Resources

Quantity

"… effective diversification depends not only on the **number of assets** in a … portfolio but also on **the ways and degrees in which their responses to economic events tend to cancel or neutralize one another.**"

DIVERSIFICATION SCOREBOARD			
SCIENTIFIC NAMES	DESCRIPTIVE NAMES	COMMON NAMES	**P&F DB PLAN**
AMBIENT PORTFOLIO DIMENSIONALITY	TOTAL NUMBER OF RISK ASSETS	**COUNT**	**7.0**
SPANNING PORTFOLIO DIMENSIONALITY	TOTAL NUMBER OF RISK ASSET RESOURCES IF EQUALLY WEIGHTED	**CONCENTRATION**	**5.1**
INTRINSIC PORTFOLIO DIMENSIONALITY	NUMBER OF DIVERSIFIABLE ASSET RESOURCES	**COMMONALITY**	**2.8**

Comparative Portfolio Quantity Scoreboard

Quantity

"… effective diversification depends not only on the **number of assets** in a … portfolio but also on **the ways and degrees in which their responses to economic events tend to cancel or neutralize one another.**"

DIVERSIFICATION SCOREBOARD				
SCIENTIFIC NAMES	DESCRIPTIVE NAMES	COMMON NAMES	**P&F DB PLAN**	**MAX U-CR B'MARK**
AMBIENT PORTFOLIO DIMENSIONALITY	TOTAL NUMBER OF RISK ASSETS	**COUNT**	**7.0**	**50.0**
SPANNING PORTFOLIO DIMENSIONALITY	TOTAL NUMBER OF RISK ASSET RESOURCES IF EQUALLY WEIGHTED	**CONCENTRATION**	**5.1**	**50.0**
INTRINSIC PORTFOLIO DIMENSIONALITY	NUMBER OF DIVERSIFIABLE ASSET RESOURCES	**COMMONALITY**	**2.8**	**31.3**

Comparative Portfolio Quantity Scoreboard & S&P 500

Quantity

"… effective diversification depends not only on the **number of assets** in a … portfolio but also on **the ways and degrees in which their responses to economic events tend to cancel or neutralize one another."**

DIVERSIFICATION SCOREBOARD					
SCIENTIFIC NAMES	DESCRIPTIVE NAMES	COMMON NAMES	P&F DB PLAN	MAX U-CR B'MARK	S&P 500 INDEX
AMBIENT PORTFOLIO DIMENSIONALITY	TOTAL NUMBER OF RISK ASSETS	COUNT	7.0	50.0	500.0
SPANNING PORTFOLIO DIMENSIONALITY	TOTAL NUMBER OF RISK ASSET RESOURCES IF EQUALLY WEIGHTED	CONCENTRATION	5.1	50.0	194.0
INTRINSIC PORTFOLIO DIMENSIONALITY	NUMBER OF DIVERSIFIABLE ASSET RESOURCES	COMMONALITY	2.8	31.3	21.5

Quality Measurement Requirements

Quality

"…a portfolio's *risk* is less than the weighted average of the risk of its individual holdings."

P&F DB Retirement Fund (TOTAL PORTFOLIO $140 Million)				Standard Deviation		
3/31/2018 - 3/31/2019			Average	Portfolio		Weighted
#	Symbol	Asset Name	Allocation			Average
1	IWN	iShares Russell 2000 Value Ind Fnd	8.00%	15.37%	=	1.23%
2	IWP	iShares Russell MidCap Grw Ind Fnd	9.50%	18.16%	=	1.73%
3	ACWX	iShares MSCI ACWI ex US Ind Fnd	11.25%	14.03%	=	1.58%
4	VONG	Vanguard Russell 1000 Growth ETF	12.00%	18.67%	=	2.24%
5	IVE	iShares S&P 500 Value Index	12.50%	13.82%	=	1.73%
6	VOO	VANGUARD S&P 500 INDEX	35.00%	15.44%	=	5.40%
7	VEA	Vanguard Europe Pacific ETF	11.75%	13.27%	=	1.56%
		Totals	100.00%	14.42%	<	15.46%

❑ Diversification Index (DI) measures a portfolio's diversification quality factor.
❑ The higher the DI, the higher the portfolio's diversification quality factor.
❑ Conversely, If the variance of all portfolio assets are identical then there is no diversification present.

Quality Scoreboard

Quality

"…a portfolio's *risk* is less than the weighted average of the risk of its individual holdings."

| P&F DB Retirement Fund (TOTAL PORTFOLIO $140 Million)		DIVERSIFICATION SCOREBOARD
1	Sum of the portfolio's weighted average Standard Deviations	15.46%
2	Portfolio's standard deviation	14.42%
3	Sum of weighted average portfolio Variance (Line 1 Squared)	2.3901%
4	Portfolio's variance (Line 2 Squared)	2.0794%
5	Variance Gap (Line 3 less line 4)	0.3108%
6	Diversification Index (Line 5 divided by line 4)	14.94%
7	Percent of Uncompensated Risk Removed from Portfolio	10.19%

Comparative Quality Scoreboard

<u>Quality</u>

"…a portfolio's *risk* is less than the weighted average of the risk of its individual holdings."

P&F DB Retirement Fund (TOTAL PORTFOLIO $140 Million)	DIVERSIFICATION SCOREBOARD	
	P&F DB PLAN	**MAX U-CR**
1 Sum of the portfolio's weighted average Standard Deviations	15.46%	21.03%
2 Portfolio's standard deviation	14.42%	13.39%
3 Sum of weighted average portfolio Variance (Line 1 Squared)	2.3901%	4.4226%
4 Portfolio's variance (Line 2 Squared)	2.0794%	1.7929%
5 Variance Gap (Line 3 less line 4)	0.3108%	2.6297%
6 Diversification Index (Line 5 divided by line 4)	14.94%	146.67%
7 Percent of Uncompensated Risk Removed from Portfolio	10.19%	100.00%

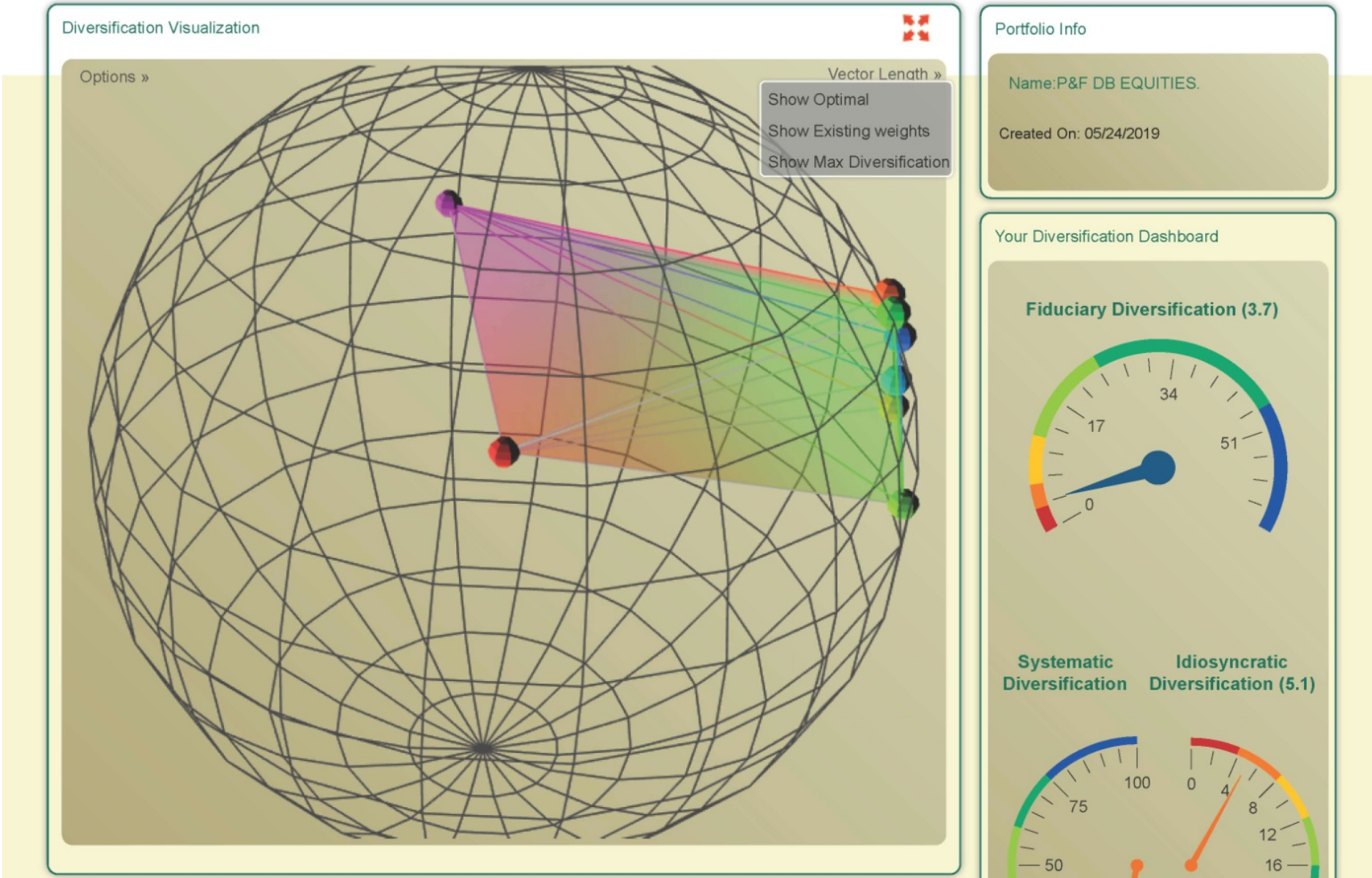# Measuring & Documenting Diversification Quantity with FinTech – Slide 1 (Existing Portfolio)
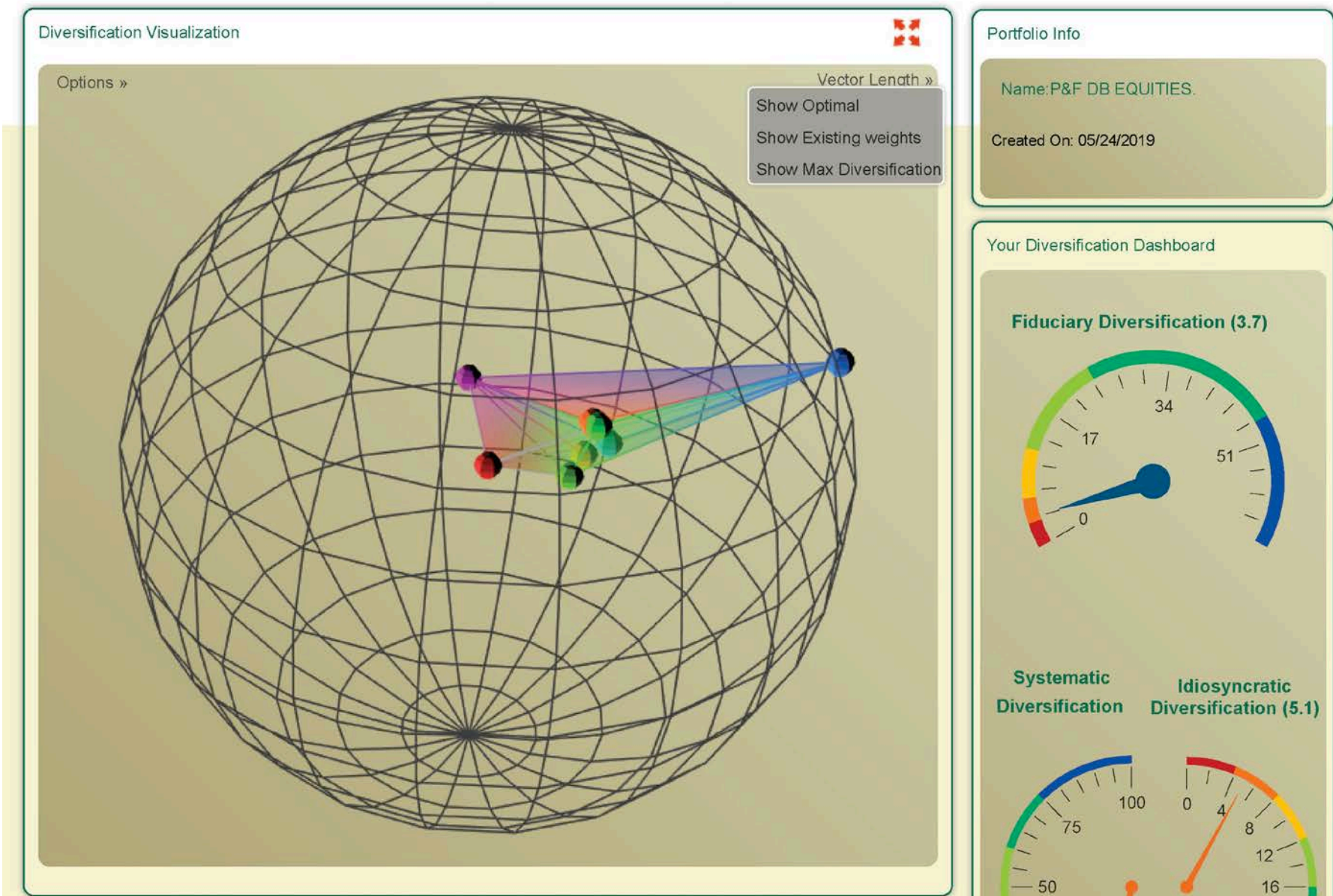
Quantity

"… effective diversification depends not only on the **number of assets** in a … portfolio but also on **the ways and degrees in which their responses to economic events tend to cancel or neutralize one another.**"
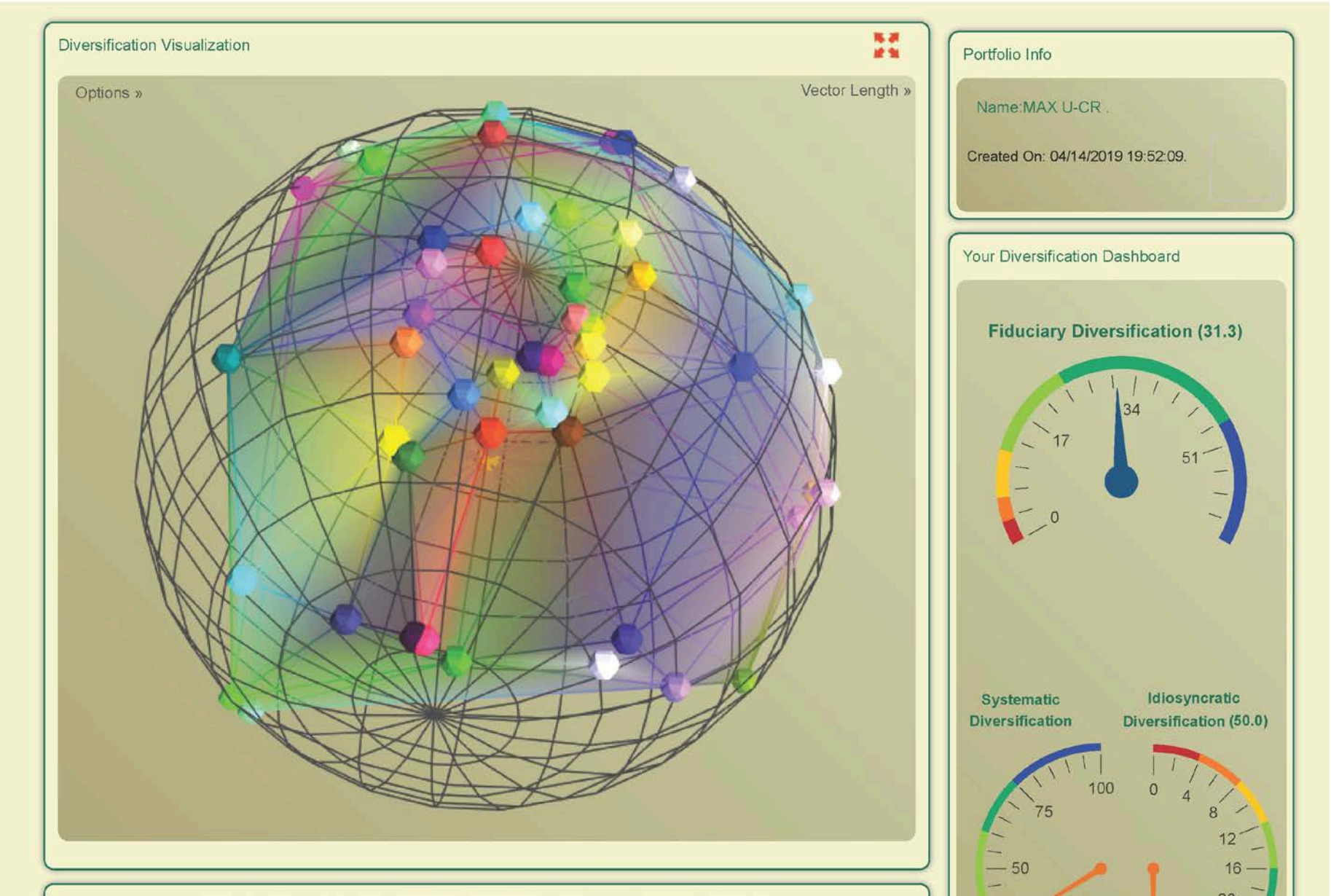
1	Count	Buttons
2	Concentration	Vector Length
3	Commonality	Vector Spread

Measuring & Documenting Diversification Quantity with FinTech – Slide 2 (If Equally Weighted)

1	Count	Buttons
2	Concentration	Vector Length
3	Commonality	Vector Spread

Measuring & Documenting Diversification Quantity with FinTech – Slide 3 (E-W, 50 Asset, "Reasonable" Portfolio)

1	Count	Buttons
2	Concentration	Vector Length
3	Commonality	Vector Spread

Steps Required To Comply with Fiduciary Requirements for Diversification

1. Install a prudent diversification strategy for measuring and managing uncompensated risk.

2. Incorporate the strategy in the Investment Policy Statement (IPS) by explanation and through use of quantity and quality benchmarks.

3. Implement the strategy in managing the portfolio.

4. Quantitatively & qualitatively monitor the portfolio for uncompensated risk removal and diversification, then compare results to an appropriate benchmarks and to the IPS.

Important - Be sure to document the procedurally prudent process followed for all diversification decisions made.

Resources

Precision Fiduciary Analytics maintains a robust free resource section on its website **https://precisionfiduciary.com/resources/** containing valuable information about the management of uncompensated investment risk including a glossary, articles, links, legal information, white papers, and its recently added free portfolio analyzer which provides a web based screening of a portfolio's diversification then reports results in a 3D visual format.

W Scott Simon. information about his books, The Prudent Investor Act: A Guide to Understanding and Index Mutual Funds: Profiting From an Investment Revolution (Foreword by John C. Bogle), as well as his Morningstar columns should be directed to: scott@rwg-retirement.com .

Questions?

AICPA PFP Section Member Resources

PFP Section members, inclusive of CPA/PFS credential holders, have access to resources on the latest planning strategies and trends in personal financial planning services so that they can practice competently and profitably. Visit aicpa.org/pfp/resources.

Estate

Tax

Retirement

Investment

Insurance & Risk Management

Practice Management

Legislative/ Regulatory

Professional Responsibilities

Consumer Content

Upcoming PFP Section Events

Webcasts (4 free events per year with CPE for PFP/PFS members)

July 10 1 – 2:45pm ET	Optimizing Social Security Benefits for Your Clients (free w/ CPE for PFP/PFS)
July 17 1 – 2:15pm ET	Understanding Longevity Annuities and Their Potential Role in Retirement Income
July 24 1 – 2:15pm ET	Capitalizing on Tax Reform: Tips for Effective Client Conversations

Conferences

January 2020	AICPA Personal Financial Planning Leadership Summit
June 7-11, 2020	ENGAGE AICPA Advanced PFP Conference Advanced Estate Planning Conference Tax Strategies for the High Net Worth Individual

- For the full calendar of upcoming PFP Section events, visit aicpa.org/pfp/events.

- PFP/PFS Members can access the archives (no CPE) for free at aicpa.org/pfp/library.

CPA/PFS News and Events

- PFS Referral Program
  - Receive 100% credit to apply toward future CPA/PFS dues by referring a CPA to become a PFS or sit for the PFS exam
- PFS Exam
  - Register now for upcoming exam windows
  - Discounts, sponsorships and volume pricing available
- Education Opportunities
  - PFP certificate program: in-depth courses in estate, retirement, tax, investments, insurance, and PFP process
  - In-person and online PFP Boot Camp
  - Self-study PFS exam review course
- Learn more at aicpa.org/pfs