

# Introduction to RiskMetrics WealthBench

## RiskMetrics WealthBench

WealthBench is a web-based platform used by relationship managers and investment advisors in their investment planning processes to help them assess portfolio risk, construct asset allocation policy and create comprehensive client proposals.

This introduction to WealthBench provides an overview of the features and benefits of the platform. It provides a description of the key elements of the investment planning process including workflows, analytics, data assumptions and client reporting.

### WealthBench Key Features

WealthBench provides a feature rich environment for advisors to manage client wealth and financial risk. Its key features include:

#### *Risk transparency*

Unlike typical wealth management applications, WealthBench provides institutional quality risk analytics. It provides portfolio-level statistics from the security level up, using the absolute risk of each position and its correlation with all other securities within the portfolio.

#### *A proprietary multi-period, simulation-based optimization methodology*

WealthBench's multi-period optimization (MPO) methodology develops allocations based on individual client characteristics including tax assumptions (this is US Tax policy only), cash flows and goals. This proprietary methodology accounts for all relevant variables such as taxes, turnover, cash flows, goals, capital market assumptions and asset class constraints.

#### *A consistent platform across the advisor base*

At the institutional level, WealthBench allows a firm to configure a custom, standardized interface across its advisor base. Firm configurable components include: asset class schema, incorporation of firm security master and client holding feeds, Capital Market Assumptions, Model Allocations/Portfolios and firm sponsored recommended lists. In addition to its configuration and integration features, WealthBench, allows each firm to customize its own client proposals.

Additionally, WealthBench can be further configured to allow a firm to produce reports for clients in various geographic locations with different capital market assumptions, currencies, and multi-lingual capabilities. WealthBench also allows a firm to configure the application to provide advisors with a set of tools appropriate for their experience or market segment. As financial advisors gain more experience or transition to higher-net worth clients, they can leverage their WealthBench training and expertise and gain access to more functionality within a consistent framework.

### WealthBench Value-Added Features

WealthBench's web-based Software as a Service (SaaS) application provides firms with 24 X 7 access and technical support. Adding services like Single Sign-On allows for a more cohesive user experience.

Firms can use WealthBench to:

*Attract New Clients*

By utilizing institutional-quality methodologies, customized with a company's proprietary research.

*Build Client Relationships*

By providing proactive, informed advice and reporting that is actionable; tailored to each client's specific risk tolerance, return objectives, and financial goals.

*Increase Productivity*

By leveraging technology to analyze data, WealthBench allows advisors, brokers, and relationship managers to spend less time aggregating data and more time advising clients.

## The WealthBench Workflow

Firms can use WealthBench's workflow to provide an integrated approach to financial and investment planning:

*Understand*

The investment planning process begins by understanding and developing a client's complete financial picture. Financial advisors use WealthBench's workflow to help them answer questions such as: What are your clients' investment objectives and goals? When would they like to retire? Have they begun saving for their children's education? How much do they wish to invest? How is their money invested? Are their investments consistent with their appetite for risk?

*Analyze/Evaluate*

Advisors can conduct an exhaustive analysis of a client's current portfolio not only at the asset class level but also at the individual security/product level. Advisors can measure client risk in both normal and stressed market conditions. For instance, advisors can perform stress tests in WealthBench to analyze how a client's portfolio would perform if historical events like Black Monday or the September 11th occurred in today's investment environment. Advisors can easily analyze the benefits of portfolio diversification and the effect of making selected changes to a portfolio from a risk and return perspective.

*Formulate Strategy*

Advisors can use WealthBench to help determine optimal asset allocation strategies. Advisors can use WealthBench to optimize their portfolios at the asset class level using the firm's discretionary asset class assumptions. WealthBench provides both a traditional mean-variance optimization technique as well as its own proprietary multi-period, simulation-based routine. In addition to the optimization route, advisors can use model allocations provided by their firm's Investment Policy Committee, or, if entitled, can create their own asset allocation policy.

*Implement*

Once an appropriate asset allocation is determined, an advisor can fulfill asset allocation recommendations with suitable products. Firms may provide model portfolios and/or recommended lists of individual products from which advisors can choose appropriate products. Current WealthBench

clients use it to recommend everything from simple equities and mutual funds to sophisticated structured products.

*Present*

WealthBench allows advisors to generate presentation-quality reports on current and proposed portfolio allocation, wealth projections, cash flows, risk analysis and a host of other analytical data. These professional reports are multilingual, extremely flexible and custom built to represent each firm's brand.

*Review and Monitor*

WealthBench's portfolio analysis tools, reports and daily updates of portfolio positions help advisors keep abreast of changing market conditions. Firms that also subscribe to RiskMetrics Portfolio Risk Reporting and Monitoring service gain the added benefit of being able to proactively monitor their portfolios for adherence to investment policies and client suitability requirements.

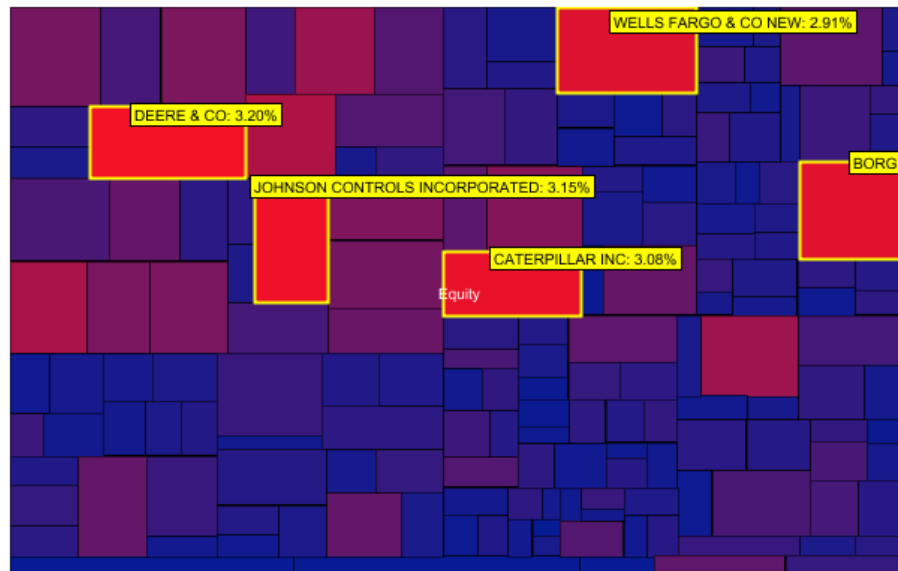
## WealthBench Functional Overview

### Risk Management

Understanding risk is the first step to managing risk. WealthBench's sophisticated institutional quality risk analysis allows advisors to better understand and manage risk in client portfolios.

Using WealthBench, advisors can analyze multi asset portfolios denominated in different currencies.

The screenshot below show the Risk Map report available in WealthBench. The Risk Map allows an advisor to quickly spot the riskiest assets in a client portfolio.





Position level risk transparency

Using WealthBench, advisors can illustrate which positions, asset classes, sectors, etc contribute the most risk to a portfolio. Quantify risk contribution, down-side risk and diversification:

Down-side risk measures allow advisors to discuss the potential losses a portfolio might experience. WealthBench will also allow users to quantify how well or poorly a portfolio has been diversified.

The screen shot below, shows a typical Risk Report in WealthBench. The report below shows a portfolio, grouped by Asset Class, depicting various risk statistics. In this example, we highlight the Amazon position and the Risk Impact column to show how a relatively small position (in terms of market value) can contribute significantly to the overall risk of the portfolio.

Description ▲	Percent	Market Value (USD)	Std Dev	Risk Impact	VaR (VAR)	VaR (%) (VAR)	XLoss	XGain
Equity	34.1%	684,340.00	23.3	54.8	12,858.28	1.9%	14,872.83	19,857.29
US Large Cap Equity	18.3%	367,640.00	37.2	39.5	7,523.20	2.0%	10,379.36	15,936.15
Amazon.com, Inc.	6.5%	130,000.00	48.4	19.1	3,336.32	2.6%	5,033.03	11,091.99
Google Inc.				26.1	5,701.42	2.4%	6,794.11	7,248.75
US Mid Cap Equity				6.4	1,384.53	3.1%	2,541.77	2,142.55
Teekay Tankers Ltd				6.4	1,384.53	3.1%	2,541.77	2,142.55
US Small Cap Equity	13.6%	272,250.00	19.6	11.8	5,738.61	2.1%	7,779.34	8,510.46
Haemonetics Corporation	13.6%	272,250.00	19.6	11.8	5,738.61	2.1%	7,779.34	8,510.46
Fixed Income	55.9%	1,121,860.72	7.4	-1.9	8,415.90	0.8%	11,254.19	9,557.96
US Gov't (Interm)	28.3%	567,962.04	9.3	1.4	5,367.74	0.9%	6,466.91	6,042.56
GOLDMAN SACHS GROUP	28.3%	567,962.04	9.3	1.4	5,367.74	0.9%	6,466.91	6,042.56
US Corps	27.6%	553,898.68	6.8	0.4	3,049.51	0.6%	5,259.34	4,099.22
WACHOVIA BANK NA 4.8 1	27.6%	553,898.68	6.8	0.4	3,049.51	0.6%	5,259.34	4,099.22
Alternative Investments	10.0%	200,000.00	17.9	13.4	484.56	0.2%	1,001.73	1,324.08
Commodities	10.0%	200,000.00	17.9	13.4	484.56	0.2%	1,001.73	1,324.08
Commodities	10.0%	200,000.00	17.9	13.4	484.56	0.2%	1,001.73	1,324.08
<b>TOTAL</b>	<b>100.0%</b>	<b>2,006,200.72</b>	<b>9.4</b>	<b>-</b>	<b>10,114.88</b>	<b>0.5%</b>	<b>11,868.29</b>	<b>20,972.41</b>
Diversification Benefit	8.6 = 46.2%							

Even though Amazon represents only 6.5% of the market weight of the portfolio, it accounts for over 19% of the overall portfolio risk

Risk reporting Statistics include:

- Standard Deviation
- RiskGrades
- Value-at-Risk
- Expected Shortfall
- Risk Impact (marginal contribution)
- Diversification Benefit
- Max Drawdown

Additional information: "Understanding WealthBench Risk Analysis Stats" <https://community.msci.com/docs/DOC-1557>

## Stress Testing

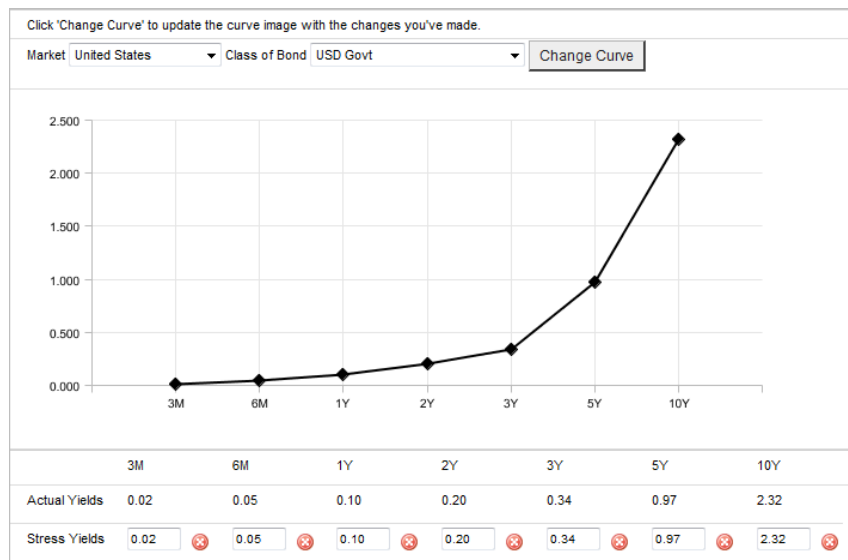
What are the potential losses a portfolio might experience due to “event risk”?

WealthBench provides users a sophisticated predictive and historical Stress Testing modules, both allowing advisors to probe portfolio-specific vulnerabilities.

In the predictive methodology, WealthBench runs a multi-variant regression between the factors being stressed and the relevant risk factors in the client portfolio. With a single factor stress test, one can think of this as a simple Beta calculation. But, as more factors are added, the more complicated the math gets as one needs to consider the correlation amongst the factors as well.

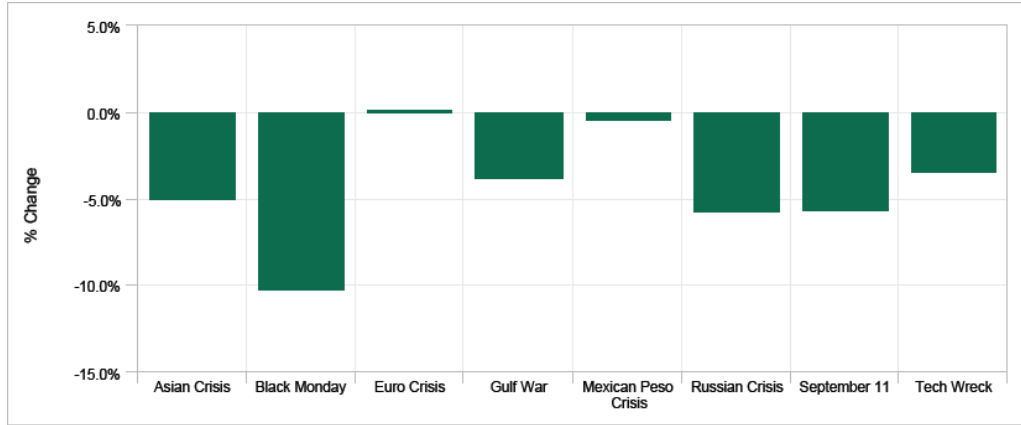
Advisors can use various RiskMetrics pre-configured Predictive Stress Tests or create their own in order to identify sensitivities in client portfolios to specific risk factors such as a rise in interest rates or changes in commodity prices.

The below screenshot depicts one of the risk factor types (yield curves) available for advisors to stress in the Custom Stress Test section of the WealthBench application.



Stress factors include:

- Indices
- Currencies
- Commodities
- Yield curves/nodes
- Individual instruments



The Historical methodology samples the changes to the relevant risk factors for the portfolio being analyzed during various historical periods. Then, it applies the risk factor changes to the client's portfolio. This allows WealthBench users to re-price the portfolio based on historical moves in risk factors and provide advisors a means of back-testing client portfolios.

Additional Information: "Research Paper - 1, 5 and 10 Day Stress Events.pdf"  
<https://community.msci.com/docs/DOC-1233>

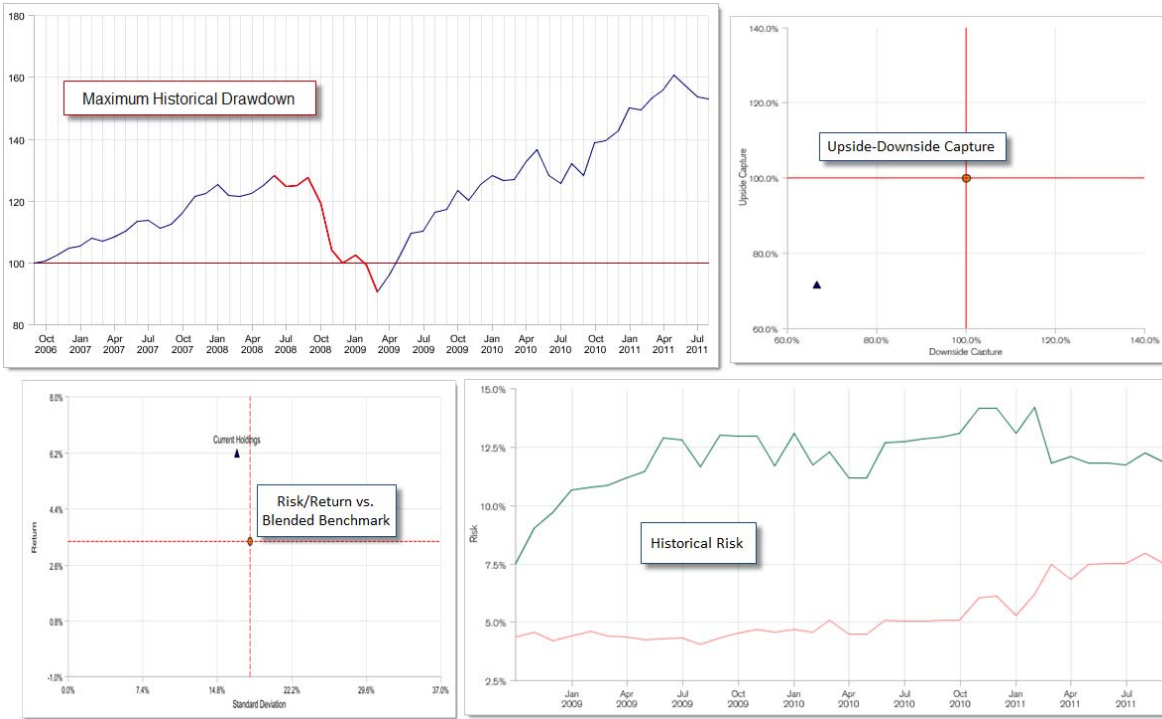
### Relative risk reporting

For advisors interested in analyzing relative risks, WealthBench provides a suite of statistics that can help them answer the question, "How is my portfolio performing against its benchmark?"



The diagram above explains the process by which several of the below statistics are calculated.

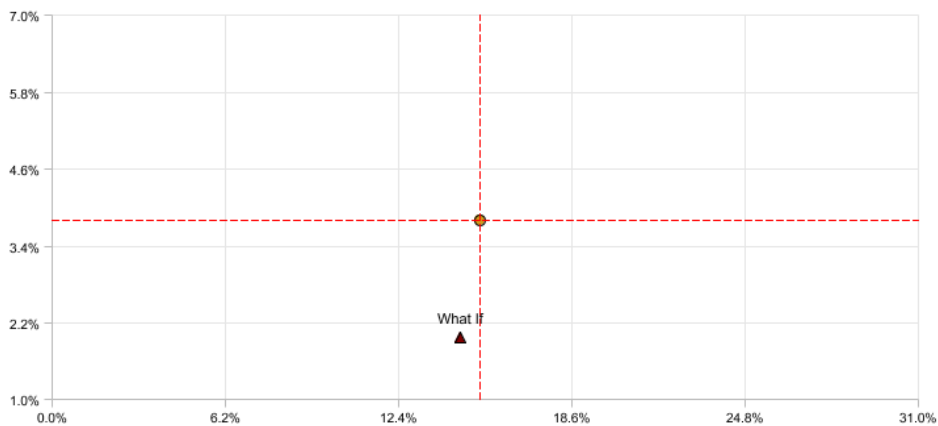
- Alpha
- Beta
- R-Squared
- Tracking Error
- Information Ratio
- Capture Ratios



The above screenshots illustrate the way in which several risk concepts are depicted within the WealthBench application.

**What If analysis:**

Using WealthBench's What-if module, advisors can assess the impact to a portfolio's risk based on changes made to its composition. Users can easily modify portfolio weights, add/remove positions or test the effectiveness of hedging strategies, and view the impact of the potential investment decisions side-by-side with the original portfolio.



## Investment Planning

WealthBench's Investment Planning components allow advisors to create a comprehensive plan for their clients.

### *Asset Allocation Constructions*

At the center of the Investment Planning process is the selection of an appropriate Asset Allocation policy. WealthBench provides users with flexibility, allowing them to construct the most appropriate policy based on the client's specific profile (risk tolerance, constraints, cash flows, goals, etc).

### *Model Allocations*

Firms may provide pre-generated model allocations that can be selected by users. Allocations may be segmented by tax status, risk tolerance and whether they include Alternative Investments, among other attributes.

### *Custom*

If permissioned, users may select their own asset allocation policy. Entitlements govern how much discretion a user has in creating the custom policy. Firms may impose limits based on asset class level constraints and/or risk tolerance budgets.

### *Mean-Variance Optimization*

Using a firm's Capital Market Assumptions and a set of asset class level constraints, WealthBench can construct an Efficient Frontier from which advisors can select portfolios to maximize the risk/return ratio for a given allocation.

### *Proprietary, Simulation-Based Optimization*

WealthBench's multi-period, simulation-based portfolio optimization methodology allows advisors to create optimal asset allocations best suited to meet client goals over an extended, multi-year period. This proprietary methodology accounts for all relevant variables such as taxes, turnover, cash flows, goals, capital market assumptions and asset class constraints.

Further Information: "Single Period and Multi Period Optimization"  
<https://community.msci.com/docs/DOC-1976>

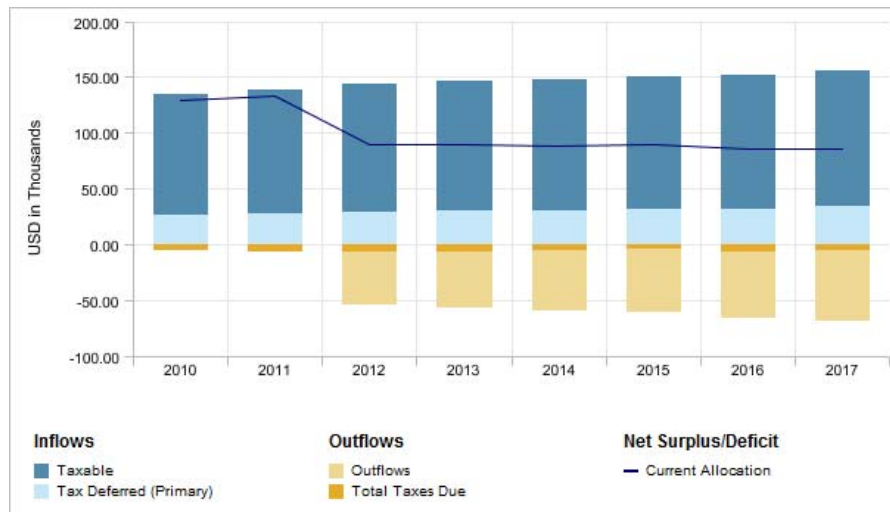


**Analysis**

WealthBench allows advisors to compare a client’s current situation to the optimal allocation, and up to two other alternatives policies. WealthBench provides advisors the tool for comprehensive analysis for validating the alternatives including:

- MPT statistics
- Efficient frontier
- Monte-Carlo simulated wealth/return projection
- Probability of achieving goals
- Detailed cash flow report
- And, many more

Goals				Probabilities
Description	Amount (USD)	Start Year	End Year	Current Allocation
College Tuition	40,000.00	2012	2017	 > 95%
Retirement Living Expenses	175,000.00	2024	2054	 20% - 30%
Sailboat	300,000.00	2026	2026	 > 95%



Additional Information: “New Simulation Methodologies in WealthBench”  
<https://community.msci.com/docs/DOC-1555>

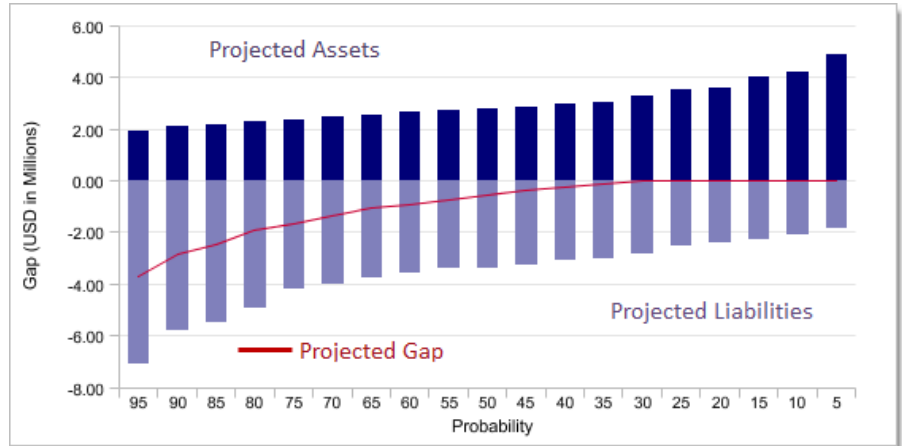


### Retirement Planning

Leveraging the powerful WealthBench simulation engine, advisors can provide sophisticated yet easy to understand analyses integral to helping individuals meet their retirement needs.

The WealthBench workflow can be used by advisors to help them address the following retirement questions:

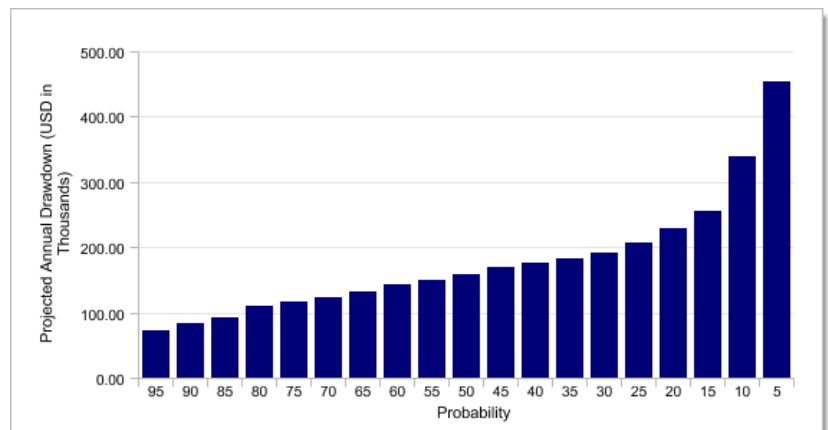
- How much will I have?
- How much will I need?
- How much do I need to save to close the gap?
- Can I maintain my standard of living?



With the above output, advisors can analyze the gap between the assets a client needs to fund their retirement and the projected value of those assets at retirement.

The WealthBench workflow can also be used by advisors to help address the following questions:

- How much can I spend?
- How long will my money last?
- Can I maintain my standard of living?



The above output allows an advisor to analyze the potential drawdown a client's portfolio could sustain throughout retirement with varying confidence levels.

Additional Information: "Planning Analytics User Guide"  
<https://community.msci.com/docs/DOC-1886>

## Specialty Analysis

In addition to creating investment plans for traditional vehicles (Taxable, Tax-Deferred, etc), WealthBench allows users to analyze investment plans including certain *special* vehicles.

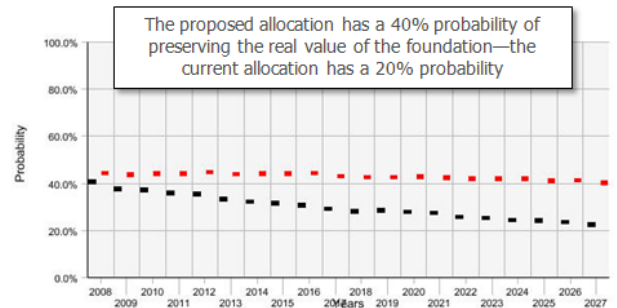
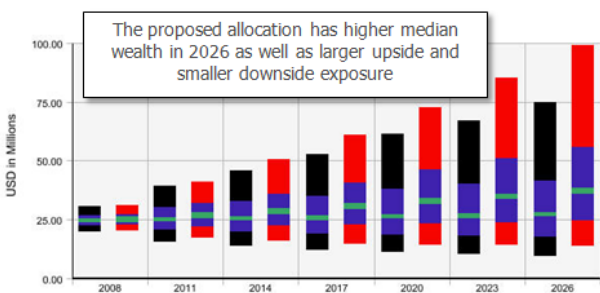
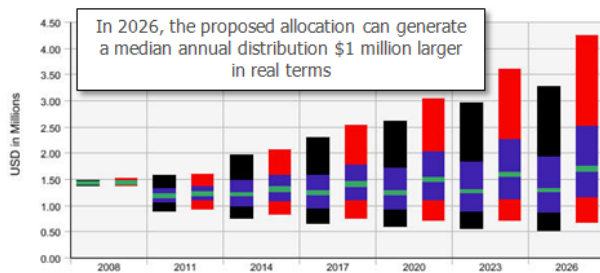
### Charitable Remainder Trusts (CRUTs/CRATs)

Wealthbench properly calculates the annual payments and remainder interest and incorporates CRUTs/CRATs into a comprehensive analysis along with a client’s taxable, tax deferred and tax-exempt accounts. (CRTs are specialized, split-interest accounts to which the client (the grantor) contributes assets that will be distributed to a charitable entity at the end of a specified period. The grantor receives a pre-determined % of trust assets annually. )

### Foundations:

Using WealthBench, an advisor can show the impacts of asset allocation and distribution decisions on a Foundation’s ability to

- Distribute funds in each year
- Distribute funds over time (cumulative)
- Grow real wealth over time
- Achieve a real minimum principal balance



Additional Information: “Foundation Samples”

<https://community.msci.com/docs/DOC-1243>

## Investment Selection and Analysis

WealthBench allows advisors to fulfill asset allocations with actual products. The following methods are available for selecting products:

- Firm sponsored model portfolios: pre-selected set of products and their weights
- Firm sponsored recommended lists
- Advisor created favorite lists
- Incorporate product fact sheets
- Select products available from the full universe of securities including equities, mutual funds, exchange traded funds, bonds, options, commodities, managed accounts, structured products, etc.

## Client Reports

WealthBench allows advisors to produce client reports with actionable results. Using WealthBench's portfolio and risk management analysis, advisors can clearly present an institution's investment advice and build client confidence. Advisors showcase their advice through personalized communications with WealthBench's flexible reporting.

Client communications and reporting are enhanced with WealthBench's analytical features. Quantitative measures of portfolio risk show clients where they stand relative to their target investment strategies. With Monte Carlo Wealth Projection, advisors can present side-by-side comparisons of a clients' projected wealth (from his or her existing investments) against an institution's recommended portfolios. Monte Carlo simulation techniques provide forecasts of the distribution of clients' future wealth, and can properly model: Stochastic asset class returns, stochastic inflation rates, tax and transaction-related costs. What-If analysis summarizes the detailed implications of portfolio rebalancing trades and new investments under consideration.

RiskMetrics can help clients customize WealthBench's PDF reporting templates by implementing client parameters. Such templates can be used as standalone reports or as additional sections to current reports. Multilingual reports can be used to provide global solutions for client proposals. Firm-branded, presentation quality reports are ready and available for advisors to present to clients.

# WealthBench Implementation

RiskMetrics' clients are guided through their implementation by a team of experts consisting of Implementation Managers, together with Client Service Specialist, Technical Professionals and Operations Professionals.

Available client implementation options:

- Customize aspects of the interface, such as colors, logos, styles and content
- Segment users by service tiers or groups of different functionality
- Create one (or more) datasets (refer to the datasets section below for more details)
- Customize questionnaire and scoring algorithm
- Set up an asset classification structure for all users
- Create report template[s] for users
- Create multilingual reports
- Currency customization

- Integration of data feeds for instrument and client portfolio data
- Select relevant market data for use in the application
- Select relevant models for valuing client positions
- Single sign-on integration with your firm's application

## Datasets

Datasets are data assumptions used by WealthBench. Datasets can include application settings such as capital market assumptions, asset allocations, and tax rates. One or more active datasets can be created within WealthBench. With proper entitlements, advisors can select which dataset to use for a given Client/Prospect or for a given proposal. Institutions can use the dataset feature to customize WealthBench for their clients in different geographic locations, using different capital assumptions, and different tax rates.

The following is a list of the main items our clients can modify within a dataset:

- Capital market assumptions
- Correlation matrix
- Model asset allocations
- Model portfolios
- Asset class constraints
- Questionnaire scoring algorithm
- Asset class benchmark indices
- Tax rates
- Turnover rates

## Market Data

Market Data refers to the prices, returns, currencies and yield curves used by WealthBench's analytics engine to calculate market values, volatilities and correlations of client holdings.

WealthBench provides integrated access to MSCI data— a source of high quality data for improved risk management. Our open time series database architecture means RiskMetrics clients can easily incorporate their institution's unique financial product offerings.

MSCI manages over 700,000 time-series across the global equity, fund, currency, commodity and fixed income markets allowing us to cover over 4 million individual securities worldwide. Coverage of all Equity Exchanges, US Mutual Funds, FX Spot Rates and Generic Yield Curves are included in the standard WealthBench implementation package. Additional fees apply for access to optional data sets: TIPS, Issue Specific Bond Curves, Mortgage Curves, Futures and other Mutual Fund markets.

While a majority of the market data can be provided by MSCI; proprietary data can be sent via MSCI's pass-through service for additional fees.

## Instrument Models

WealthBench supports the following financial instruments through back end feeds and can access over 70 instrument models for more complex financial instruments:

- Generic Bond
- Bond option
- Cash
- Equity
- Equity option
- Money market
- Bond future
- Commodity (spot)
- Commodity future
- Commodity future option
- Commodity option
- Convertible bond
- FRN
- Fx forward
- Fx option
- Inflation indexed bond
- Mortgage backed security

WealthBench also has the ability to provide very sophisticated model to capture the risk of structured products.

## SaaS Application Connectivity

WealthBench uses the HTTPS protocol, a 128-bit encrypted connection. Users can access the WealthBench site over the Internet or through a dedicated line. In either case, a browser that supports 128 bit encryption is required.

WealthBench SaaS software runs on servers managed by that are located remotely from the client site, and made available for client use using a “software as a service” model. Users access the full interactive functionality of the hosted risk management applications using an Internet Explorer browser.

The key design and service objectives for SaaS Hosted Applications are:

- Security of client data: The security is designed to ensure client data is confidential.
- High availability: Redundancy and fault tolerance have been engineered into the system, and there are implemented disaster recovery options.
- Site performance: The site provides fast analytic responses through distributed processing and multiple analytic servers.

## Total Wealth Management Solution

Using RiskMetrics products, clients can specify risk based investment policies and proactively monitor risk. Apart from WealthBench, RiskMetrics wealth management tools include:

### *RiskMetrics RiskManager*

A web-based application that helps institutional investors address their firms’ risk management requirements. RiskManager combines methodologies, technology, and data required to help firms make more informed financial decisions.

### *RiskMetrics Risk Suitability Monitoring*

The Risk Suitability Monitoring services is a nightly service that allows firms to monitor suitability by checking that all client portfolios are within their risk tolerances as specified in the firm’s Investment Policy Statement process.

## Client Service Information is Available 24 Hours a Day

[clientservice@msci.com](mailto:clientservice@msci.com)

### Americas

Americas	1.888.588.4567 (toll free)
Atlanta	+ 1.404.551.3212
Boston	+ 1.617.532.0920
Chicago	+ 1.312.675.0545
Montreal	+ 1.514.847.7506
Monterrey	+ 52.81.1253.4020
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San Francisco	+ 1.415.836.8800
Sao Paulo	+ 55.11.3706.1360
Stamford	+1.203.325.5630
Toronto	+ 1.416.628.1007

### Europe, Middle East & Africa

Cape Town	+ 27.21.673.0100
Frankfurt	+ 49.69.133.859.00
Geneva	+ 41.22.817.9777
London	+ 44.20.7618.2222
Milan	+ 39.02.5849.0415
Paris	0800.91.59.17 (toll free)

### Asia Pacific

China North	10800.852.1032 (toll free)
China South	10800.152.1032 (toll free)
Hong Kong	+ 852.2844.9333
Seoul	798.8521.3392 (toll free)
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## About MSCI

MSCI Inc. is a leading provider of investment decision support tools to investors globally, including asset managers, banks, hedge funds and pension funds. MSCI products and services include indices, portfolio risk and performance analytics, and governance tools.

The company’s flagship product offerings are: the MSCI indices which include over 148,000 daily indices covering more than 70 countries; Barra portfolio risk and performance analytics covering global equity and fixed income markets; RiskMetrics market and credit risk analytics; ISS governance research and outsourced proxy voting and reporting services; FEA valuation models and risk management software for the energy and commodities markets; and CFRA forensic accounting risk research, legal/regulatory risk assessment, and due-diligence. MSCI is headquartered in New York, with research and commercial offices around the world.