

## Windham Labs: Sophisticated Investment Analytics and Smart Wealth Management

# Sophisticated Investment Analytics and Smart Wealth Management



**Website** <https://www.windhamlabs.com>

**Key dates:** Founded in 1988

**Clients:** Financial advisors, family offices, banks, institutions, and endowments

**Value proposition:** Investment analytics, portfolio construction, wealth management

**Senior management**

[Mark Kritzman](#), Chief Executive Officer

[Jonathan Kazarian](#), Director Of Sales and Business Development

**Windham Capital** is the parent company, the home office, that launched its own tech company, **Windham Labs**. Windham Labs has released well-known software products that were initially developed for internal use, but later became available to their clients, financial advisors, family offices, banks, institutions, and endowments. The solutions that Windham has created are included in their flagship product, the **Windham Portfolio Advisor** (WPA), which is a complete portfolio-optimization and risk-management platform.

Windham is one of the most popular solutions on the market. **Mark Kritzman**, CEO, and **Jonathan Kazarian**, Director of Sales and Business Development, showed me the ins and outs of Windham, and how they have managed to stay ahead of the game both business- and tech-wise.

Mark has been in the finance business for a long time. He previously worked for Bankers Trust and AT&T, eventually going off on his own to found Windham Capital Management and Windham Labs. For 16 years he has had a dual career in academia, as a senior lecturer at MIT. He has conducted extensive research and has published many articles in academic and practitioner journals, and is the author of seven books.



Jonathan studied economics and finance at Bentley University. After graduating, he worked for several big-name financial firms, such as Ameritrade, before coming to Windham in 2012. He started as Senior Associate, and eventually became Director of Sales and Business Development in December 2018.

## Windham Labs in a nutshell

WPA is the flagship, desktop-based solution that allows advisors to do a deep dive into portfolios. As Jon explained, the desktop app is used by Chief Investment Officers or investment committees, who then pass the data about capital market forecasting and risk and return estimates to the online, client-facing platform built for the individual client—financial advisors.

Currently, Windham is working on a web-based digital wealth-management platform. What's important to note is that the new financial advisor portal is not a holdings-based tool, but rather returns-based. Jon said that they use data to model out portfolios and perform comparison analysis.

“The online application has additional functionality. It has a bunch of different risk measures as well. It also has the ability, if permissioned, for the advisor to go in and make adjustments to an allocation. So maybe they want to start with a moderate portfolio, but they want to add a legacy position because the client worked at GE for 30 years. It could do something like that.”—Jon

## Windham offers sophisticated analytics, not robo-advice

Windham Labs was initially developed, along with a multitude of features, to help better manage Windham Capital's portfolios. To expand and improve the capabilities of digital wealth-management software and asset management, Mark and his colleagues came up with four main innovations.

**Innovation #1:** One of Mark's colleagues discovered that you can augment the mean-variance projected function to include relative risk along with absolute risk. Instead of an efficient frontier, you get an efficient surface and three dimensions— expected returns, standard deviation, and tracking error.

“Traditional mean-variance optimization constrains use constraints such as no more than 10% emerging markets, and no less than 40% domestic. It's much better to just do mean variance tracking optimization, to get a better answer, and I mean an objectively better answer.”—Mark

**Innovation #2:** Assessing a portfolio's exposure to loss within an investment horizon rather than just at the end of the investment horizon offers some powerful advantages. Through research and analytics, Mark concluded what one would expect: there is a greater exposure to loss within the horizon than at the end of the horizon. Windham covers both statistics and Mark said that this is critical to managing wealth and setting expectations with clients.

**Innovation #3:** Partitioning historical returns into the quiet periods versus turbulent periods, and using turbulent periods to get a more realistic assessment of exposure to loss, or to construct portfolios that are more resilient to turbulent periods.

**Innovation #4:** Full-scale optimization that takes into account all of the data, alongside more realistic descriptions of investor preferences to develop the optimal portfolio, in addition to the mean-variance solution.

“The advantage of this is that it can help you model out a nonnormal utility curve. For example, you may have a client whose risk aversion changes at a particular threshold. It might also be the case that you have a portfolio of a large number of alternative assets in it that tend to be nonnormally distributed. By using that empirical data instead of assuming log-normality we're able to keep those distributions intact while modeling portfolios.”—Jon

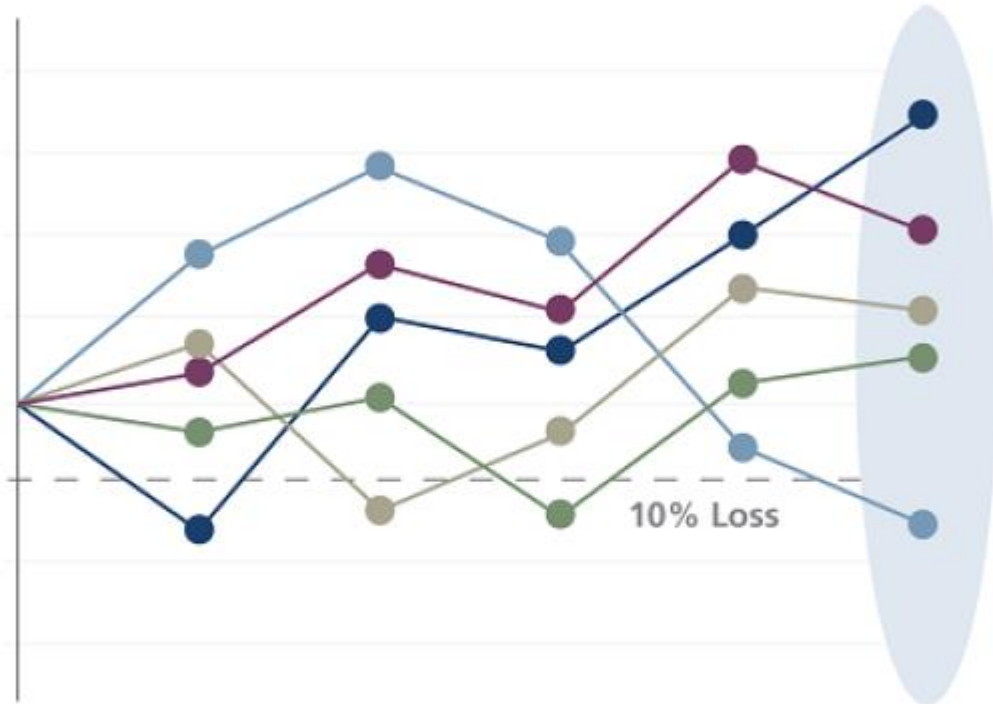
## Client reporting and suite of available tools

Windham's software generates comprehensive reports for advisors. Jon showed me an example of such a report. In the evaluation section, a client can customize the summary and metrics included in the report. Essentially, Windham allows advisors and asset managers to look at a client's ability to meet their financial goals by comparing portfolios side by side while evaluating allocations and different attributes such as distributions, asset classes, risk evaluation, and probability of loss.

Windham has a risk-budgeting tool that allows advisors to see which asset classes are contributing the most risk to a portfolio. Jon explained that this information is often used to evaluate how an advisor can make the most significant change in the portfolio's risk while making the most modest change in its allocation to minimize transaction costs and taxes.

“For example, if I gave a 1% increase to large-cap stocks, we increase the total portfolio value of risk to above \$12,000 where if I give that same increase to US bonds, it would decrease it to \$15,000.”—Jon

### Within-Horizon Risk



**Probability of a 10% Loss at the End of the Horizon is 20%**

**Probability of a 10% Loss Within the Horizon is 80%**

Jon highlighted the factor analysis capability included in the platform, with 16 factors that come preloaded with the software. He said that clients can also incorporate their own factors.

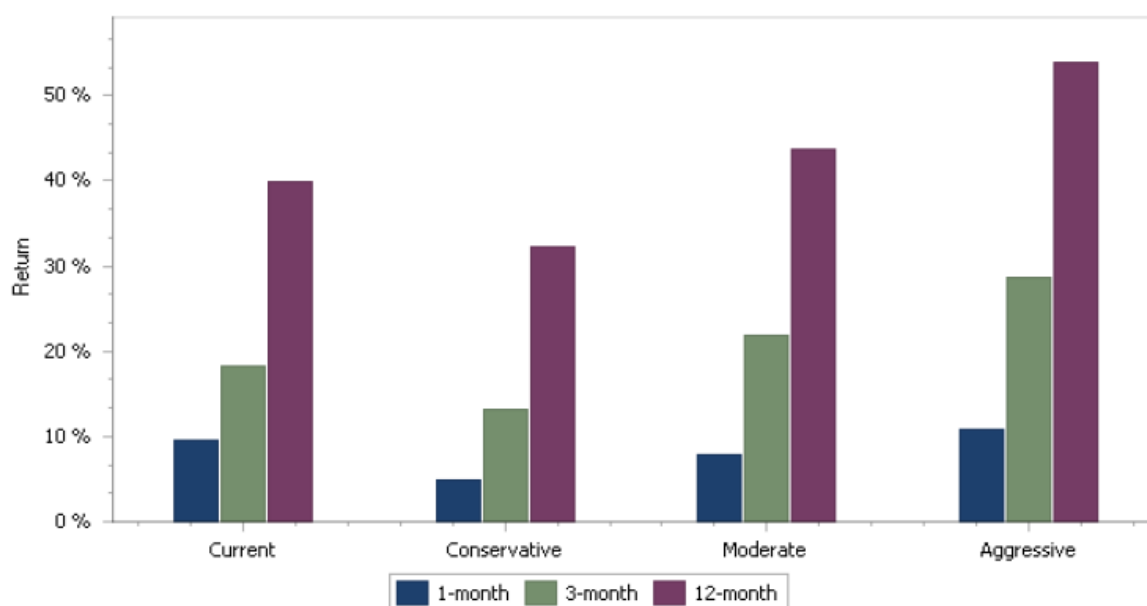
“A nice addition we’ve added to traditional factor analysis is the ability to decompose the risk of the portfolio through the lens of factors. We can also apply this frame work to return attribution. Given that we know how risky a particular factor is, and we know what our loading is to that factor, we can see how much of the portfolio’s risk can be explained by that factor. We can then see if that risky bet paid off and what factors were associated with the portfolios returns.”—Jon

The reports also include cash-flow planning, with the capacity to model even the most complex institutional spending policy but also the ease of modeling out retail retirement plans In addition, the PDF reports show probability of loss (with turbulent time periods), wealth distribution, and wealth analysis.

## Company structure, product development, & management

Windham has a back office, trading operation, portfolio-management operation, compliance team, and software development team. The team of software engineers works both on Windham Labs and on internal processes required by the company. The company also has a business-development unit, which includes salespeople, as well as marketing and public relations staff.

## BEST PERIODS



### Best Periods (01/1985 - 08/2015)

|          | Current | Conservative | Moderate | Aggressive |
|----------|---------|--------------|----------|------------|
| 1-month  | 9.48%   | 4.96%        | 7.94%    | 10.72%     |
| 3-month  | 18.31%  | 13.07%       | 21.94%   | 28.54%     |
| 12-month | 39.83%  | 32.21%       | 43.64%   | 53.80%     |

Mark travels around the world speaking with representatives from large and small financial institutions on various topics, gathering information about challenges they are facing, and ascertaining how to solve these problems.

“We have our existing clients, and we're continually getting feedback from them on features that we offer, the user friendliness of the product, etc. We take all of that information and try to come up with a research and development agenda that will continually enhance the product.”—Mark

## Tech stack

The underlying algorithms powering the application were built in **MATLAB**, while the front-end of the WPA was written in **C#**. The platform also has various plugins for charting and other tools.

The web-based platform was written in **Python** and uses the **Django** framework. Databases are **PostgreSQL** and run on **Amazon Web Services**. Most back-end calculations are also run on **MATLAB**, like the desktop app, and Jon mentioned that though they have explored the possibility of replacing **MATLAB** with **Python**, this wouldn't make sense time- or cost-wise.

## Windham's future and challenges

Mark said that in terms of development, they are well on their path to making all of their features web-based. As they research new ideas and introduce new features, these will be rolled out for the web-based platform. Apart from the number of things they are exploring,



Mark mentioned one innovation they have come up with—being able to take a portfolio with asset classes and decomposing it into factor exposures. Mark recently published an article in *The Journal of Portfolio Management* on an [integrated approach to asset allocation and factor investing](#).

The biggest challenge for Windham is distribution. Although it's a small company of 20 people, Windham has done well in building a client base; however it lacks the distribution channels that large institutions have. One way Mark feels they can solve this is by working out a collaboration with a large institution, where Windham provides an API, or a version of their white-labeled software, to get more distribution.

## WealthTech Club takeaways

Powered by some of the best minds in investment theory, Windham Labs has developed a suite of innovative investment tools that differentiates itself from the rest of the fintech industry. Mark and his team have innovated and, based on what I learned, are continuing to innovate in a mission to offer their clients even more value through new web-based solutions. Windham's advanced analytical features and enormous set of tools will be a smart addition to an advisor's arsenal.



Written by Vasyl Soloshchuk, CEO and co-owner at [INSART](#), FinTech & Java engineering company. Vasyl is also the author of [WealthTech Club](#), which conducts research into Fortune and Startup Robo-advisor and Wealth Management companies in terms of the technology ecosystem.