

WealthDefender™

Pilot Case

Levine Services, LLC

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WealthDefender™

1. Pilot Test Approach
2. Pilot Test Details
3. Test Results
4. The Variable Annuity Benefits
5. Conclusions

The Pilot Test Approach

- Financial Advisors prepared an input sheet for a test client case
- The client was in the accumulation phase and the various goals extended from accumulation to distribution phase
- The objective of the test was (a) to benchmark WealthDefender™ against a deterministic probability of goal success and (b) demonstrate how WealthDefender™ can extend this analysis in the areas of risk analysis, portfolio optimization, and plan optimization via actionable recommendations
- The test was conducted in two parts:
 - The Financial Advisor produced results using the deterministic approach
 - The same input sheet was used to enter the case into WealthDefender™
 - Results were compared

The Pilot Case in More Detail

Bob and Mary have been married for over twenty-five years. They have two children. Franklin, 16, and Anna, 8, will attend college. Bob's parents are in both good physical and financial health. Only Mary's mother is still alive but she is currently in her retirement community's end of life ward. Bob and Mary are charitably inclined.

Bob owns a successful small real estate firm and invests in real estate. His businesses' success is directly correlated to the local real estate market. With the combination of the depressed prices and lack of turnover in the market his business income and value were reduced up to 70%. His business's profit sharing 401k contributions were also affected by the volatility. His business has since recovered but he is acutely aware of the risks as retirement approaches even closer. The business owns a rental property portfolio which Bob plans to sell when he retires because he does not want to handle the property management associated with the rental income.

The Pilot Case in More Detail

Mary is a public school teacher. She is under the old Tier 1 benefits package which includes a 50% pension, 403b with a matching provision and lifetime medical care for her and Bob. She will receive some social security benefits from her first career as a real estate agent, where she met Bob. Her benefits will be reduced due to the Windfall Elimination Provision due to her time served in a public pension program.

Franklin was born before Bob and Mary achieved their current level of success so they have been attempting to make up for lost college funding time. He has qualified for a small private scholarship fund. Anna is showing signs of high level academic competence so they are planning accordingly. Also, Bob's parents have been saving into 529 plans for both children and plan to for the foreseeable future.

Ideally, Bob and Mary would retire in 2021. It is less preferable, but acceptable, for them to retire in 2026. Given their current investments, finances, and a group of potential alternate investments including a variable annuity, we want to help them to understand the probability of meeting their goals under both of these scenarios. If these probabilities are not acceptable to them, we will help them to optimize their portfolio and cash flows, and subject these to stress testing, to achieve better probabilities of success.

Results Summary

- For the Acceptable Retirement Age scenario, the advisor computed a 99% probability of success and WealthDefender™ the same
- For the Ideal Retirement Age scenario, the advisor computed a 49% probability of success and WealthDefender™ the same
- This is because for this case we had not activated the WealthDefender™ stochastic-based simulation of investments, cash flows, and net worth in order to mirror the advisor's deterministic method of treating returns and volatilities
- While the advisor's calculation stopped at analysis of acceptable vs. ideal with a basic portfolio reallocation, WealthDefender™ optimizes the ideal allocation via product selection (including a variable annuity purchase) and optimal asset allocation powered by VaR and CFaR
 - Introducing a variable annuity brings probability of success up to 59%
 - Further optimizing asset allocation brings probability of success up to 99%
- This result is then subject to stress testing which shows the probability of success dropping to 88%
- To maintain a 95% probability of success, WealthDefender™ suggests dialing down the retirement lifestyle cash flow down by 30% (other solutions are possible, including increasing starting investments, or optimizing the duration or amount of other flows)

The Details...

Goal Setting

Adding Goals:

- Advisor calculation and WealthDefender™: Multiple goal inputs with priority order goal definition capabilities.

Assumptions:

- Advisor calculation: Assign a base inflation rate and capital markets assumptions and define how each goal relates to that assumption.
- WealthDefender™: The system has the ability to stochastically model all wealth drivers specific to each type of goal and cash flow, using historically-based or forward-looking capital markets assumptions.

Cash Flows:

- Advisor calculation: Defined inflows and outflows.
- WealthDefender™: Both inflows and outflows can be sensitive to a goal specific volatility range, statistical distribution, or an assigned variable index.

Current Accounts

Account Type:

- Advisor calculation and WealthDefender™: Identify specific accounts and the associated tax implications.

Assets:

- Investments-
 - Classification:
 - Advisor calculation: Reclassifies investments into broad asset classes with their associated characteristics.
 - WealthDefender™: Identifies specific investments and their individual risk and return drivers as well as their dependencies with other investments.
 - Characteristics:
 - Advisor calculation: Assigns the broad asset class return and standard deviation assumptions.
 - WealthDefender™: Not only identifies the individual investment's metrics but also how they effect the entire portfolio. Looking beyond traditional measures to correlations, Value at Risk, Cash Flow at Risk . Furthermore, the system can account for forecasts as opposed to past performance only.

Inflows and Outflows:

- Advisor calculation: Deterministic
- WealthDefender™: Able to use deterministic or stochastic approaches.

Conclusions

- The client can choose between pursuing the acceptable retirement age scenario, an optimized ideal retirement age scenario, or a “defensive” optimized retirement age scenario that delivers 95% probability of success even under stressed market conditions
- WealthDefender™ benchmarks to the advisor’s calculation for the acceptable and ideal retirement age scenarios
- WealthDefender™ goes far beyond the advisor’s calculation by presenting optimized alternatives to the client that consider introduction of new products, optimized asset allocation, and optimized cash flows
- **In particular, addition of a variable annuity with a guaranteed minimum withdrawal benefit and portfolio reallocation based on risk, goals, and goal bucketing raises the probability of success to 99% - and planning to reduce lifestyle costs during retirement by 30% can maintain that probability of success even in sustained poor market conditions**
- The advisor can persuade Bob and Mary through such fact-based, actionable ideas that it will be their best advisory choice for their lifetime planning needs

Appendix – Detailed Output

➤ Account Definition

Tell us About Yourself | Accounts | Balance Sheet | Cashflows | Goals | View Risk | Configure

account static
accounts

Account Definition

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Name	Code	Owner	Other Owner	Tax Status	Local Tax Rate	Federal Tax Rate	Capital Gain Tax Rate	Capital Gain Tax Weight	Investment Growth Weight	Account Fee	Max Annual Contribution	Minimum Withdrawal Age	Early Withdrawal Penalty	Account Pool	Beneficiary	Other Beneficiary	Inst. Short Name	Inst. Type	Inst. Domicile	
Anna 529	Anna 529	Anna Sample		Tax deferred	0.0	33.00	15.00	0.0	0.0	0.0	26,000	18.00	10.0000	Master Pool			-	-	-	✗
Anna 529 Grandparents	Anna 529 Grandparents	Anna Sample		Tax deferred	0.0	33.00	15.00	0.0	0.0	0.0	26,000	18.00	10.0000	Master Pool			-	-	-	✗
Bob 401k	Bob 401k	Bob Sample		Tax deferred	0.0	33.00	15.00	0.0	0.0	0.0	22,000	59.50	10.0000	Master Pool	Mary Sample		-	-	-	✗
Bob IRA	Bob IRA	Bob Sample		Tax deferred	0.0	33.00	15.00	0.0	0.0	0.0	6,000	59.50	10.0000	Master Pool	Mary Sample		Vanguard	Brokerage	United States	✗
Franklin 529	Franklin 529	Franklin Sample		Tax deferred	0.0	33.00	15.00	0.0	0.0	0.0	26,000	18.00	10.0000	Master Pool			-	-	-	✗
Franklin 529 Grandparents	Franklin 529 Grandparents	Franklin Sample		Tax deferred	0.0	33.00	15.00	0.0	0.0	0.0	26,000	18.00	10.0000	Master Pool			-	-	-	✗
Joint Investment Account	Joint Investment Account	Bob Sample	Mary Sample	Taxable	0.0	33.00	15.00	0.0	0.0	0.0	99,999,999	-	0.0	Master Pool			-	-	-	✗
Mary IRA	Mary IRA	Mary Sample		Tax deferred	0.0	33.00	15.00	0.0	0.0	0.0	6,000	59.50	10.0000	Master Pool	Mary Sample		Vanguard	Brokerage	United States	✗
Mary PERS	Mary PERS	Mary Sample		Tax deferred	0.0	33.00	15.00	0.0	0.0	0.0	22,000	59.50	10.0000	Master Pool	Bob Sample		-	-	-	✗

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Appendix – Detailed Output

➤ Account and Tax Waterfall

Switch client:

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- account static
- accounts
- tax waterfall

Tax Account Waterfall Definition

If *linked account* is not specified on the cash flow setup, the below waterfall structure will direct the cash to/from one or more account.

The table on the left is used for depositing; cash goes first to the first account, unless the yearly maximum contribution is reached - in which case further accounts will be used in the specified order.

Similarly, when withdrawing money, the first account on the table on the right hand side will be used, unless the account is empty - in which case the first non-empty account will be used.

Deposit

[5 lines]

Short Name	Tax Status	Tax Rate (%)	Max Contribution		
Mary PERS	Tax deferred	0.3300	22000	▲	▼
Bob 401k	Tax deferred	0.3300	22000	▲	▼
Bob IRA	Tax deferred	0.3300	6000	▲	▼
Mary IRA	Tax deferred	0.3300	6000	▲	▼
Franklin 529	Tax deferred	0.3300	26000	▲	▼
Anna 529	Tax deferred	0.3300	26000	▲	▼
Anna 529 Grandparents	Tax deferred	0.3300	26000	▲	▼
Franklin 529 Grandparents	Tax deferred	0.3300	26000	▲	▼
Joint Investment Account	Taxable	0.3300	99999999	▲	▼

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Withdrawal

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Short Name	Tax Status	Tax Rate (%)	Max Contribution		
Franklin 529	Tax deferred	0.3300	26000	▲	▼
Franklin 529 Grandparents	Tax deferred	0.3300	26000	▲	▼
Anna 529	Tax deferred	0.3300	26000	▲	▼
Anna 529 Grandparents	Tax deferred	0.3300	26000	▲	▼
Joint Investment Account	Taxable	0.3300	99999999	▲	▼
Mary IRA	Tax deferred	0.3300	6000	▲	▼
Bob IRA	Tax deferred	0.3300	6000	▲	▼
Bob 401k	Tax deferred	0.3300	22000	▲	▼
Mary PERS	Tax deferred	0.3300	22000	▲	▼

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Appendix – Detailed Output

➤ Balance Sheet

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Net Worth Capital Market Data Insurance

assets and liabilities

Assets

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Name	Program	Asset Group	Asset Class	Asset Category	Market Value	Account Pool	Account Name	Type
Anna 529 Account	N/A	N/A	Equity	Education Savings Account	15,000	Master Pool	Anna 529	
Anna 529 Account Grandparents	N/A	N/A	Multi-Asset	Education Savings Account	25,000	Master Pool	Anna 529 Grandparents	
DHY US High Yield Bonds	-	-	-	-	40,000	Master Pool	Bob 401k	Cap. Investment
DJP Commodities	-	-	-	-	80,000	Master Pool	Bob 401k	Cap. Investment
EEM Emerging Markets	-	-	-	-	40,000	Master Pool	Bob 401k	Cap. Investment
FBIDX Fidelity US Bond Index	-	-	-	-	200,000	Master Pool	Mary IRA	Cap. Investment
FBIDX Fidelity US Bond Index	-	-	-	-	250,000	Master Pool	Mary PERS	Cap. Investment
FBIDX Fidelity US Bond Index	-	-	-	-	160,000	Master Pool	Bob 401k	Cap. Investment
FBIDX Fidelity US Bond Index	-	-	-	-	25,000	Master Pool	Joint Investment Account	Cap. Investment
Franklin 529 Account	N/A	N/A	Equity	Education Savings Account	25,000	Master Pool	Franklin 529	
Franklin 529 Account Grandparents	N/A	N/A	Multi-Asset	Education Savings Account	60,000	Master Pool	Franklin 529 Grandparents	
IWR Mid Cap	-	-	-	-	80,000	Master Pool	Bob 401k	Cap. Investment
IWR Mid Cap	-	-	-	-	50,000	Master Pool	Joint Investment Account	Cap. Investment
Investment Property	N/A	N/A	Real Estate	Investment Real Estate	500,000			
Jackson Lifeguard Freedom 6 DB VA	-	-	-	-	0.0			Annuity
PIGLX Global Bond Fund	-	-	-	-	80,000	Master Pool	Bob 401k	Cap. Investment
Primary Residence	N/A	N/A	Real Estate	Personal Property	400,000			
SPY Large Cap	-	-	-	-	325,000	Master Pool	Joint Investment Account	Cap. Investment
SPY Large Cap	-	-	-	-	200,000	Master Pool	Bob IRA	Cap. Investment
SPY Large Cap	-	-	-	-	160,000	Master Pool	Bob 401k	Cap. Investment
TEDMX Developing Markets	-	-	-	-	120,000	Master Pool	Bob 401k	Cap. Investment
VBK small cap	-	-	-	-	40,000	Master Pool	Bob 401k	Cap. Investment
VBK small cap	-	-	-	-	50,000	Master Pool	Joint Investment Account	Cap. Investment
VDMIX Developed Markets	-	-	-	-	50,000	Master Pool	Joint Investment Account	Cap. Investment

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Liabilities

Appendix – Detailed Output

➤ Balance Sheet

Liabilities

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Name	Program	Asset Group	Asset Class	Asset Category	Market Value	Account Pool	Account Name	Type
Credit Card	N/A	N/A	Other	Credit Cards	-10,000			X
Joint Mortgage	N/A	N/A	Real Estate	Mortgage	-300,000			X
Vehicle Loans - both cars	N/A	N/A	Other	Auto Loan	-50,000			X

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capital market investments

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Name	Code	Direction	Model Type	Price	#Securities	Market Value	Suggested Value	Suggested Change	Strategy	Account Name	
DHY US High Yield Bonds	DHY US High Yield Bonds	Long	ASSET	2.93	13,652	40,000	-	-	Master Pool	Bob 401k	X
DJP Commodities	DJP Commodities	Long	ASSET	49.19	1,626	80,000	-	-	Master Pool	Bob 401k	X
EEM Emerging Markets	EEM Emerging Markets	Long	ASSET	48.20	830	40,000	-	-	Master Pool	Bob 401k	X
FBIDX Fidelity US Bond Inde	FBIDX Fidelity US Bond Index	Long	ASSET	11.27	17,746	200,000	-	-	Master Pool	Mary IRA	X
FBIDX Fidelity US Bond Inde	FBIDX Fidelity US Bond Index	Long	ASSET	11.27	14,197	160,000	-	-	Master Pool	Bob 401k	X
FBIDX Fidelity US Bond Inde	FBIDX Fidelity US Bond Index	Long	ASSET	11.27	22,183	250,000	-	-	Master Pool	Mary PERS	X
FBIDX Fidelity US Bond Inde	FBIDX Fidelity US Bond Index	Long	ASSET	11.27	2,218	25,000	-	-	Master Pool	Joint Investment Account	X
IWR Mid Cap	IWR Mid Cap	Long	ASSET	102.84	778	80,000	-	-	Master Pool	Bob 401k	X
IWR Mid Cap	IWR Mid Cap	Long	ASSET	102.84	486	50,000	-	-	Master Pool	Joint Investment Account	X
PIGLX Global Bond Fund	PIGLX Global Bond Fund	Long	ASSET	9.69	8,256	80,000	-	-	Master Pool	Bob 401k	X
SPY Large Cap	SPY Large Cap	Long	ASSET	127.05	1,259	160,000	-	-	Master Pool	Bob 401k	X
SPY Large Cap	SPY Large Cap	Long	ASSET	127.05	1,574	200,000	-	-	Master Pool	Bob IRA	X
SPY Large Cap	SPY Large Cap	Long	ASSET	127.05	2,558	325,000	-	-	Master Pool	Joint Investment Account	X
TEDMX Developing Markets	TEDMX Developing Markets	Long	ASSET	25.71	4,667	120,000	-	-	Master Pool	Bob 401k	X
VBK small cap	VBK small cap	Long	ASSET	79.27	631	50,000	-	-	Master Pool	Joint Investment Account	X
VBK small cap	VBK small cap	Long	ASSET	79.27	505	40,000	-	-	Master Pool	Bob 401k	X
VDMIX Developed Markets	VDMIX Developed Markets	Long	ASSET	10.04	4,980	50,000	-	-	Master Pool	Joint Investment Account	X

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Appendix – Detailed Output

➤ Input of historical price timeseries' – note that computed historical returns and volatilities can be overridden with forecast values

Code	Type	Tenor	Label	Current Level	Historical Return (%)	Return Override (%)	Equal Volatility (%)	EWMA Volatility (%)	Volatility Override (%)	Data From	Data Until	Update timestamp	Calib. timestamp	Issuer		
'JJE Energy	CO	-		23.6	-25.77	none	36.57	28.47	none	2007-Oct-25	2011-Jan-03	2011-Jan-04	2011-Jan-28	Barclays Bank PLC	✗	risk_free
DHY US High Yield Bonds	IR_P	-		2.93	6.4308	none	34.34	36.34	none	1998-Jul-29	2011-Jan-05	2011-Jan-06	2011-Jan-28	Credit Suisse	✗	risk_free
DJP Commodities	CO	-		49.19	0.2505	none	23.40	20.58	none	2006-Oct-30	2011-Jan-03	2011-Jan-04	2011-Jan-28	Barclays Bank PLC	✗	risk_free
EEM Emerging Markets	EQ	-		48.2	20.65	none	28.01	28.06	none	2003-Apr-15	2011-Jan-05	2011-Jan-06	2011-Jan-28	Barclays Bank PLC	✗	risk_free
FBIDX Fidelity US Bond Index	IR_P	-		11.27	5.1386	none	4.2615	4.1968	none	1996-Jun-20	2011-Jan-05	2011-Jan-06	2011-Jan-28	Fidelity Investments	✗	risk_free
FCV SX Convertible Fund	OT	-		25.7	8.6713	none	19.79	19.09	none	1990-May-09	2011-Jan-04	2011-Jan-05	2011-Jan-28	Fidelity Investments	✗	risk_free
FHIGX Municipal Bonds	IR_P	-		12.28	4.3788	none	5.0515	5.4392	none	1986-Jan-02	2011-Jan-03	2011-Jan-04	2011-Jan-28	Fidelity Investments	✗	risk_free
IAU Precious Metals	CO	-		13.82	20.20	none	20.72	16.59	none	2005-Jan-28	2011-Jan-03	2011-Jan-04	2011-Jan-28	Blackrock	✗	risk_free
IWR Mid Cap	EQ	-		102.84	8.3245	none	22.22	22.57	none	2001-Aug-27	2011-Jan-03	2011-Jan-04	2011-Jan-28	Blackrock	✗	risk_free
IYH DJ US Healthcare	EQ	-		66.19	1.4603	none	18.52	16.24	none	2000-Jun-16	2011-Jan-04	2011-Jan-05	2011-Jan-28	Blackrock	✗	risk_free
OREAX Real Estate	RE	-		19.14	10.08	none	31.87	32.78	none	2003-Oct-14	2011-Jan-03	2011-Jan-04	2011-Jan-28	OppenheimerFunds	✗	risk_free
PBDAX Investment Grade Corporate	IR_P	-		10.48	5.1809	none	8.5730	13.87	none	2005-Jan-25	2011-Jan-03	2011-Jan-04	2011-Jan-28	PIMCO	✗	risk_free
PFGAX Long Term US Govt Bonds	IR_P	-		10.47	5.4096	none	10.72	18.11	none	1998-Nov-11	2011-Jan-03	2011-Jan-04	2011-Jan-28	PIMCO	✗	risk_free
PIGLX Global Bond Fund	IR_P	-		9.69	5.7059	none	8.4965	9.6884	none	1996-May-31	2011-Jan-03	2011-Jan-04	2011-Jan-28	PIMCO	✗	risk_free
PRROX Putnam Retirement Ready 20	FD	-		16.96	2.1874	none	17.78	14.29	none	2006-Jul-21	2011-Jan-03	2011-Jan-04	2011-Jan-28	Putnam	✗	risk_free
RWR REIT	RE	-		62.12	8.9009	none	30.37	33.11	none	2001-Aug-27	2011-Jan-03	2011-Jan-04	2011-Jan-28	SSGA Funds Management	✗	risk_free
SPY Large Cap	EQ	-		127.05	1.7210	none	20.53	19.99	none	2001-Jan-04	2011-Jan-03	2011-Jan-04	2011-Jan-28	SSGA Funds Management	✗	risk_free
TEDMX Developing Markets	EQ	-		25.71	11.32	none	23.20	25.21	none	1995-Sep-21	2011-Jan-05	2011-Jan-06	2011-Jan-28	Franklin Templeton Investment Funds	✗	risk_free
TEGOX Global Fund	EQ	-		17.86	5.6979	none	18.51	21.07	none	1993-Jan-13	2011-Jan-03	2011-Jan-04	2011-Jan-28	Franklin Templeton Investment Funds	✗	risk_free
VBK small cap	EQ	-		79.27	8.4724	none	24.82	24.89	none	2004-Jan-30	2011-Jan-03	2011-Jan-04	2011-Jan-28	Vanguard	✗	risk_free
VDMIX Developed Markets	EQ	-		10.04	1.8594	none	21.08	24.34	none	2000-Jul-17	2011-Jan-05	2011-Jan-06	2011-Jan-28	Vanguard	✗	risk_free
*FVX 5 Year US Treasury	IR	0	RISK_FREE 2.02%	-6.4802	none	none	36.34	60.70	none	1987-Jan-02	2011-Jan-03	2011-Jan-04	2011-Jan-28	US Government	✗	risk_free

Appendix – Detailed Output

➤ Definition of Cash Inflows

Cash Flows

Inflows

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Name	Repeat Type	Description	Ccy	Amount	Stochastic	Best Case Amount	Worst Case Amount	Inflation Label	Inflation	Start Date	End Date	Linked Account	Linked Goal
Addition to Anna Grandparents 529	▼ Annual	▼ Other Income	▼ USD	12,000	▼ no	0.0	0.0	▼ -	-	2011-Jan-01	2020-Jan-01	▼ Anna 529 Grandparents	▼ -
Addition to Franklin Grandparents 529	▼ Annual	▼ Other Income	▼ USD	12,000	▼ no	0.0	0.0	▼ -	-	2011-Jan-01	2013-Jan-01	▼ Franklin 529 Grandparents	▼ -
Additions to Anna's 529	▼ Annual	▼ Other Income	▼ USD	12,000	▼ no	0.0	0.0	▼ -	-	2011-Jan-01	2020-Jan-01	▼ Anna 529	▼ -
Additions to Bob's 401k	▼ Annual	▼ Other Income	▼ USD	22,000	▼ yes	22,000	8,000	▼ -	-	2011-Jan-01	2020-Jan-01	▼ Bob 401k	▼ -
Additions to Franklin's 529	▼ Annual	▼ Other Income	▼ USD	12,000	▼ no	0.0	0.0	▼ -	-	2011-Jan-01	2013-Jan-01	▼ Franklin 529	▼ -
Additions to Mary PERS	▼ Annual	▼ Other Income	▼ USD	4,500	▼ no	0.0	0.0	▼ -	-	2011-Jan-01	2020-Jan-01	▼ Mary PERS	▼ -
Bob's Other Pre-Retirement Income	▼ Annual	▼ Business Income - Passive	▼ USD	25,000	▼ no	0.0	0.0	▼ -	-	2011-Jan-01	2020-Jan-01	▼ -	▼ -
Business Income - RE Brokerage	▼ Annual	▼ Business Income - Active	▼ USD	200,000	▼ yes	300,000	60,000	▼ Enter rate:	-	2011-Jan-01	2020-Jan-01	▼ -none-	▼ -
High School Teaching Income	▼ Annual	▼ Salary & Earned Income	▼ USD	65,000	▼ no	0.0	0.0	▼ CPI	0.0	2011-Jan-01	2020-Jan-01	▼ -none-	▼ -
Mary's Pension Income	▼ Annual	▼ Pension Income	▼ USD	50,000	▼ no	0.0	0.0	▼ CPI	-	2020-Jan-01	2051-Jan-01	▼ -	▼ -
Rental Income	▼ Annual	▼ Other Income	▼ USD	20,000	▼ no	0.0	0.0	▼ CPI	-	2011-Jan-01	2020-Jan-01	▼ -none-	▼ -
Sale of Bob's Business	▼ No repeat	▼ Other Income	▼ USD	700,000	▼ yes	750,000	350,000	▼ -	-	2021-Jan-01	2021-Jan-01	▼ -	▼ -
Sale of Rentals	▼ No repeat	▼ -	▼ USD	500,000	▼ no	0.0	0.0	▼ Case-Schiller Composite Index	-	2020-Jan-01	2020-Jan-01	▼ -none-	▼ -
Social Security Income - Bob	▼ Annual	▼ Social Security Income	▼ USD	29,736	▼ no	0.0	0.0	▼ CPI	-	2022-Jan-01	2046-Jan-01	▼ -	▼ -
Social Security Income - Mary	▼ Annual	▼ Social Security Income	▼ USD	10,000	▼ no	0.0	0.0	▼ CPI	-	2027-Jan-01	2051-Jan-01	▼ -	▼ -

[Download data]

Outflows

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Appendix – Detailed Output

➤ Definition of Cash Outflows 1

Outflows													
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Name	Repeat Type	Description	Ccy	Amount	Stochastic	Best Case Amount	Worst Case Amount	Inflation Label	Inflation	Start Date	End Date	Linked Account	Linked Goal
Anna College	▼ Annual	▼ Education - Children	▼ USD	-11,990	▼ no	0.0	0.0	▼ CPI-U Education	-	2021-Sep-01	2025-Jun-30	▼ -	▼ WISHES - Anna College
Anna College Graduation	▼ No repeat	▼ Child Activities	▼ USD	-2,000	▼ no	0.0	0.0	▼ CPI-U Recreation	-	2025-Jun-30	2025-Jun-30	▼ -	▼ WISHES - Celebrations
Anna HS Graduation	▼ No repeat	▼ Child Activities	▼ USD	-1,000.00	▼ no	0.0	0.0	▼ CPI-U Recreation	-	2021-Jun-30	2021-Jun-30	▼ -	▼ WISHES - Celebrations
Anna Wedding	▼ No repeat	▼ Child Activities	▼ USD	-20,000	▼ no	0.0	0.0	▼ CPI-U Recreation	-	2028-Jan-01	2028-Jan-01	▼ -	▼ WISHES - Anna Wedding
Annual Travel	▼ Annual	▼ Vacation / Travel	▼ USD	-20,000	▼ no	0.0	0.0	▼ CPI-E Recreation	-	2021-Jan-01	2051-Jan-01	▼ -	▼ WANTS - Travel
Auto loans - Pre-Retirement	▼ Monthly	▼ Car 1 Loan Payment	▼ USD	-1,000.00	▼ no	0.0	0.0	▼ -	-	2011-Jan-01	2017-Jan-01	▼ -	▼ -
Bob Car Down Payment	▼ Annual	▼ Car 1 Lease Payment	▼ USD	-600.00	▼ no	0.0	0.0	▼ -	-	2021-Jan-01	2046-Jan-01	▼ -	▼ WANTS - Bob Car
Bob Car Monthly Payments	▼ Monthly	▼ Car 1 Lease Payment	▼ USD	-500.00	▼ no	0.0	0.0	▼ -	-	2021-Jan-03	2046-Jan-01	▼ -	▼ WANTS - Bob Car
Care for Mary's Mother	▼ Annual	▼ Elder Care	▼ USD	-6,000	▼ no	0.0	0.0	▼ CPI-E Medical Care	-	2012-Jan-01	2017-Dec-31	▼ -	▼ WISHES - Elder Care
Credit Card Payments	▼ Monthly	▼ Credit Card Debt Payment	▼ USD	-500.00	▼ no	0.0	0.0	▼ CPI	-	2011-Jan-01	2023-Jan-01	▼ -	▼ -
Franklin College Graduation	▼ No repeat	▼ Child Activities	▼ USD	-2,000	▼ no	0.0	0.0	▼ CPI-U Recreation	-	2018-Jun-30	2018-Jun-30	▼ -	▼ WISHES - Celebrations
Franklin College Tuition	▼ Annual	▼ Education - Children	▼ USD	-24,793	▼ no	0.0	0.0	▼ CPI-U Education	-	2013-Sep-01	2017-Jun-30	▼ -	▼ WISHES - Franklin College
Gift - Animal Shelter	▼ Annual	▼ Charitable Donations	▼ USD	-500.00	▼ no	0.0	0.0	▼ -	-	2011-Jan-01	2051-Jan-01	▼ -	▼ WISHES - Gifts and Donations
Gift - Homeless Shelter	▼ Annual	▼ Charitable Donations	▼ USD	-1,000.00	▼ no	0.0	0.0	▼ -	-	2011-Jan-01	2051-Jan-01	▼ -	▼ WISHES - Gifts and Donations
Gift - Save the Whales	▼ Annual	▼ Charitable Donations	▼ USD	-200.00	▼ no	0.0	0.0	▼ -	-	2011-Jan-01	2051-Jan-01	▼ -	▼ WISHES - Gifts and Donations
Home - Amortized Upkeep	▼ Annual	▼ Maintenance - Repairs	▼ USD	-6,000	▼ yes	6,000	7,500	▼ CPI	-	2021-Jan-01	2051-Jan-01	▼ -	▼ NEEDS - retirement
Lifestyle	▼ Annual	▼ Household Expenses	▼ USD	-100,000	▼ no	0.0	0.0	▼ CPI	-	2021-Jan-01	2051-Jan-01	▼ -	▼ WANTS - Lifestyle
Mary Car Down Payment	▼ Annual	▼ Car 2 Lease Payment	▼ USD	-1,000.00	▼ no	0.0	0.0	▼ -	-	2021-Jan-01	2051-Jan-01	▼ -	▼ WANTS - Mary Car
Mary Car Monthly Payment	▼ Monthly	▼ Car 2 Lease Payment	▼ USD	-500.00	▼ no	0.0	0.0	▼ -	-	2021-Jan-01	2051-Jan-01	▼ -	▼ WANTS - Mary Car

Appendix – Detailed Output

➤ Definition of Cash Outflows 2

Mary's Group Life Premiums	Annual	Life Insurance for Spouse	USD	-50.00	no	0.0	0.0	-	-	2011-Jan-01	2020-Jan-01	-	-	X
Mortgage Payment	Monthly	Mortgage Payments	USD	-3,000	no	0.0	0.0	-	-	2011-Jan-01	2038-Jan-01	-	-	X
Outflows to Anna's 529	Annual	Investment Fees	USD	-12,000	no	0.0	0.0	-	-	2011-Jan-01	2026-Jan-01	-	-	X
Outflows to Bob's 401k	Annual	Investment Fees	USD	-22,000	yes	22,000	8,000	-	-	2011-Jan-01	2020-Jan-01	-	-	X
Outflows to Franklin's 529	Annual	Investment Fees	USD	-12,000	no	0.0	0.0	-	-	2011-Jan-01	2013-Jan-01	-	-	X
Outflows to Mary PERS	Annual	Investment Fees	USD	-4,500	no	0.0	0.0	-	-	2011-Jan-01	2020-Jan-01	-	-	X
Retirement Expenses	Annual	Household Expenses	USD	-100,000	yes	100,000	125,000	CPI-E Other Goods	-	2021-Jan-01	2045-Jan-01	-	NEEDS - retirement	X
Retirement Income Mary Only	Annual	Household Expenses	USD	-75,000	yes	75,000	95,000	CPI-E Other Goods	-	2046-Jan-01	2051-Jan-01	-	NEEDS - retirement	X
State Medical Premium	Monthly	Healthcare Insurance - Medical	USD	-1,200	no	0.0	0.0	CPI-E Medical Care	-	2021-Jan-01	2051-Jan-01	-	NEEDS - Health Care	X
Vacation Condo Amortized Upkeep	Annual	-	USD	-5,000	no	0.0	0.0	CPI	-	2021-Jan-01	2051-Jan-01	-	WISHES - Vacation Condo	X
Vacation Condo Down Payment	No repeat	-	USD	-60,000	no	0.0	0.0	CPI	-	2021-Jan-01	2021-Jan-01	-	WISHES - Vacation Condo	X
Vacation Condo Monthly Payment	No repeat	Mortgage Payments	USD	-1,750	no	0.0	0.0	CPI	-	2021-Jan-01	2051-Jan-01	-	WISHES - Vacation Condo	X

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Annuities

[add new record]

Name	Included	Purchase Date	Redemption Start Date	Purchase Price	Account	Join and Survivor Type	Issuer
Jackson Lifeguard Freedom 6 DB VA	yes	2011-Jan-01	2029-Apr-28	700,000	select account	joint and survivor	X

[Download data]

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Appendix – Detailed Output

➤ Goal Definition (each of these is linked to a cash flow)

Tell us About Yourself Accounts Balance Sheet Cashflows Goals View Risk Configure

Switch scenario: ideal retirement age optimized :: New scenario: [] Ok :: Copy ideal retirement age optimized to: [] Ok :: Delete ideal retirement age optimized: [] Ok

Current Goals

You can include more than one goal into the calculation, by setting the 'Include in Calculation' property for each goals, and then starting the Cash flow at risk calculation

[5 lines] [add new record]

Goal	Flows	Include in Calculation	Force	End Date	Inflow volatility (%)	Outflow volatility (%)	Funding Account / Pool			
NEEDS - Health Care	▼	yes	-		0.0	0.0	▼ Master Pool	▲	🔒	✖
NEEDS - Retirement	▼	yes	-		0.0	0.0	▼ Master Pool	▲	🔒	✖
WANTS - Bob Car	▼	yes	-		0.0	0.0	▼ Master Pool	▲	🔒	✖
WANTS - Lifestyle	▼	yes	-		0.0	0.0	▼ Master Pool	▲	🔒	✖
WANTS - Mary Car	▼	yes	-		0.0	0.0	▼ Master Pool	▲	🔒	✖
WANTS - Travel	▼	yes	-		0.0	0.0	▼ Master Pool	▲	🔒	✖
WISHES - Anna College	▼	yes	-		0.0	0.0	▼ Master Pool	▲	🔒	✖
WISHES - Anna Wedding	▼	yes	-		0.0	0.0	▼ Master Pool	▲	🔒	✖
WISHES - Celebrations	▼	yes	-		0.0	0.0	▼ Master Pool	▲	🔒	✖
WISHES - Elder Care	▼	yes	-		0.0	0.0	▼ Master Pool	▲	🔒	✖
WISHES - Franklin College	▼	yes	-		0.0	0.0	▼ Master Pool	▲	🔒	✖
WISHES - Gifts and Donations	▼	yes	-		0.0	0.0	▼ Master Pool	▲	🔒	✖
WISHES - Vacation Condo	▼	yes	-		0.0	0.0	▼ Master Pool	▲	🔒	✖

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Cash flow at risk calculation :

Use Mortality: Type: -none- Solver: -none- Confidence (%): 5 Calculate all scenarios: Start

target allocation

inflation and mortality

Appendix – Detailed Output

➤ Capital Markets Assumptions – Acceptable Retirement Age

Effective Date	'JJE Energy	DHY US High Yield Bonds	DJP Commodities	EEM Emerging Markets	FBIDX Fidelity US Bond Index	FCVXSX Convertible Fund	FHIGX Municipal Bonds	IAU Precious Metals	IWR Mid Cap	IYH DJ US Healthcare	OREAX Real Estate	PBDAX Investment Grade Corporate	PFGAX Long Term US Govt Bonds	PIGLX Global Bond Fund	PRROX Putnam Retirement Ready 20	RWR REIT	SPY Large Cap	TEDMX Developing Markets	TEGOX Global Fund	VBK small cap	VDMIX Developed Markets	*FVX 5 Year US Treasury
2011-01-01	0	2.0	8.0	2.0	30.75	0	0	0	2.5	0	0	0	0	4.0	0	0	34.25	5.5	0	2.5	8.5	0.0

[Download data]

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Target Allocation Type Definition

[5 lines] [15 lines] [add new record]

Name	Expected Return (%)	Volatility (%)	Is Risk Free
TEDMX Developing Markets	11.32	23.20	no
SPY Large Cap	1.7210	20.53	no
RWR REIT	8.9009	30.37	no
PIGLX Global Bond Fund	5.7059	8.4965	no
PRROX Putnam Retirement Ready 20	2.1874	17.78	no
PFGAX Long Term US Govt Bonds	5.4096	10.72	no
PBDAX Investment Grade Corporate	5.1809	8.5730	no
OREAX Real Estate	10.08	31.87	no
IYH DJ US Healthcare	1.4603	18.52	no
IWR Mid Cap	8.3245	22.22	no
IAU Precious Metals	20.20	20.72	no
FHIGX Municipal Bonds	4.3788	5.0515	no
FCVXSX Convertible Fund	8.6713	19.79	no
FBIDX Fidelity US Bond Index	5.1386	4.2615	no
DJP Commodities	0.2505	23.40	no
EEM Emerging Markets	20.65	28.01	no
DHY US High Yield Bonds	6.4308	34.34	no
'JJE Energy	-25.77	36.57	no
TEGOX Global Fund	5.6979	18.51	no
VBK small cap	8.4724	24.82	no
VDMIX Developed Markets	1.8594	21.08	no
*FVX 5 Year US Treasury	-6.4802	36.34	yes

[Download data]

Appendix – Detailed Output

➤ Capital Markets Assumptions – Ideal Retirement Age

Effective Date	DHY US High Yield Bonds	DJP Commodities	EEM Emerging Markets	FBIDX Fidelity US Bond Index	FCVSX Convertible Fund	FHIGX Municipal Bonds	IAU Precious Metals	IWR Mid Cap	IYH DJ US Healthcare	OREAX Real Estate	PBDAX Investment Grade Corporate	PFGAX Long Term US Govt Bonds	PIGLX Global Bond Fund	PRROX Putnam Retirement Ready 20	RWR REIT	SPY Large Cap	TEDMX Developing Markets	TEGOX Global Fund	VBK small cap	VDMIX Developed Markets	*FVX 5 Year US Treasury
2011-01-01	2.0	8.0	2.0	30.75	0	0	0	2.5	0	0	0	0	4.0	0	0	34.25	5.5	0	2.5	8.5	0.0

[Download data]

Clear all data first

Target Allocation Type Definition

[5 lines] [15 lines] [add new record]

Name	Expected Return (%)	Volatility (%)	Is Risk Free
VDMIX Developed Markets	1.8594	21.08	no
IWR Mid Cap	8.3245	22.22	no
*FVX 5 Year US Treasury	-6.4802	36.34	yes
PBDAX Investment Grade Corporate	5.1809	8.5730	no
DHY US High Yield Bonds	6.4308	34.34	no
VBK small cap	8.4724	24.82	no
EEM Emerging Markets	20.65	28.01	no
FHIGX Municipal Bonds	4.3788	5.0515	no
DJP Commodities	0.2505	23.40	no
PFGAX Long Term US Govt Bonds	5.4096	10.72	no
IAU Precious Metals	20.20	20.72	no
SPY Large Cap	1.7210	20.53	no
PIGLX Global Bond Fund	5.7059	8.4965	no
FCVSX Convertible Fund	8.6713	19.79	no
TEDMX Developing Markets	11.32	23.20	no
TEGOX Global Fund	5.6979	18.51	no
RWR REIT	8.9009	30.37	no
OREAX Real Estate	10.08	31.87	no
IYH DJ US Healthcare	1.4603	18.52	no
PRROX Putnam Retirement Ready 20	2.1874	17.78	no
FBIDX Fidelity US Bond Index	5.4079	4.2615	no

[Download data]

Appendix – Detailed Output

➤ Capital Markets Assumptions – Ideal Retirement Age Optimized

Effective Date	'JJE Energy	DHY US High Yield Bonds	DJP Commodities	EEM Emerging Markets	FBIDX Fidelity US Bond Index	FCVXSX Convertible Fund	FHIGX Municipal Bonds	IAU Precious Metals	IWR Mid Cap	IYH DJ US Healthcare	OREAX Real Estate	PBDAX Investment Grade Corporate	PFGAX Long Term US Govt Bonds	PIGLX Global Bond Fund	PRROX Putnam Retirement Ready 20	RWR REIT	SPY Large Cap	TEDMX Developing Markets	TEGOX Global Fund	VBK small cap	VDMIX Developed Markets	*FVX 5 Year US Treasury	
2011-01-01	0	2.0	8.0	2.0	30.75	0	0	0	2.5	0	0	0	0	4.0	0	0	34.25	5.5	0	2.5	8.5	0.0	✖

[Download data]

Clear all data first

Target Allocation Type Definition

[5 lines] [15 lines] [add new record]

Name	Expected Return (%)	Volatility (%)	Is Risk Free
TEGOX Global Fund	2.8490	37.02	▼no ✖
PBDAX Investment Grade Corporate	2.5904	17.15	▼no ✖
DHY US High Yield Bonds	3.2154	68.68	▼no ✖
*FVX 5 Year US Treasury	-3.2401	72.67	▼yes ✖
EEM Emerging Markets	10.33	56.01	▼no ✖
PIGLX Global Bond Fund	2.8530	16.99	▼no ✖
IWR Mid Cap	4.1622	44.43	▼no ✖
DJP Commodities	0.1253	46.80	▼no ✖
IYH DJ US Healthcare	0.7301	37.04	▼no ✖
PRROX Putnam Retirement Ready 20	1.0937	35.55	▼no ✖
IAU Precious Metals	10.10	41.45	▼no ✖
VDMIX Developed Markets	0.9297	42.16	▼no ✖
FBIDX Fidelity US Bond Index	2.7040	8.5229	▼no ✖
TEDMX Developing Markets	5.6612	46.39	▼no ✖
RWR REIT	4.4505	60.74	▼no ✖
PFGAX Long Term US Govt Bonds	2.7048	21.45	▼no ✖
VBK small cap	4.2362	49.64	▼no ✖
'JJE Energy	-12.88	73.15	▼no ✖
SPY Large Cap	0.8605	41.06	▼no ✖
FCVXSX Convertible Fund	4.3357	39.57	▼no ✖
FHIGX Municipal Bonds	2.1894	10.10	▼no ✖
OREAX Real Estate	5.0409	63.74	▼no ✖

Appendix – Detailed Output

➤ Capital Markets Assumptions – Ideal Retirement Age Optimized Stress

Effective Date	'JJE Energy	DHY US High Yield Bonds	DJP Commodities	EEM Emerging Markets	FBIDX Fidelity US Bond Index	FCVFX Convertible Fund	FHIGX Municipal Bonds	IAU Precious Metals	IWR Mid Cap	IYH DJ US Healthcare	OREAX Real Estate	PBDAX Investment Grade Corporate	PFGAX Long Term US Govt Bonds	PIGLX Global Bond Fund	PRROX Putnam Retirement Ready 20	RWR REIT	SPY Large Cap	TEDMX Developing Markets	TEGOX Global Fund	VBK small cap	VDMIX Developed Markets	*FVX 5 Year US Treasury	
2011-01-01	0	2.0	7.0	2.0	86.5	0	0	0	2.5	0	0	0	0	0.0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0

[Download data]

Clear all data first

Target Allocation Type Definition

[5 lines] [15 lines] [add new record]

Name	Expected Return (%)	Volatility (%)	Is Risk Free
DHY US High Yield Bonds	3.2154	68.68	no
*FVX 5 Year US Treasury	-3.2401	72.67	yes
EEM Emerging Markets	10.33	56.01	no
PIGLX Global Bond Fund	2.8530	16.99	no
IWR Mid Cap	4.1622	44.43	no
TEGOX Global Fund	2.8490	37.02	no
DJP Commodities	0.1253	46.80	no
PFGAX Long Term US Govt Bonds	2.7048	21.45	no
VBK small cap	4.2362	49.64	no
'JJE Energy	-12.88	73.15	no
SPY Large Cap	0.8605	41.06	no
TEDMX Developing Markets	5.6612	46.39	no
FBIDX Fidelity US Bond Index	2.7040	8.5229	no
VDMIX Developed Markets	0.9297	42.16	no
IAU Precious Metals	10.10	41.45	no
PRROX Putnam Retirement Ready 20	1.0937	35.55	no
IYH DJ US Healthcare	0.7301	37.04	no
RWR REIT	4.4505	60.74	no
FCVFX Convertible Fund	4.3357	39.57	no
FHIGX Municipal Bonds	2.1894	10.10	no
PBDAX Investment Grade Corporate	2.5904	17.15	no
OREAX Real Estate	5.0409	63.74	no

Appendix – Detailed Output

- The portfolio can be optimized on the basis of Value at Risk, Initial Balances, and on any cash flow / goal amount or duration

Switch scenario: ideal retirement age optimized [Ok] [Ok] Delete ideal retirement age optimized [Ok]

Current Goals

You can include more than one goal into the calculation, by setting the 'Include in Calculation' property for each goal, and then starting the Cash flow at risk calculation

[5 lines] [add new record]

Goal	Flows	Include in Calculation	Force End Date	Inflow volatility (%)	Outflow volatility (%)	Funding Account / Pool
NEEDS - Retirement	yes	-	0.0	0.0	Master Pool	
WISHES - Elder Care	yes	-	0.0	0.0	Master Pool	
WISHES - Gifts and Donations	yes	-	0.0	0.0	Master Pool	
WISHES - Celebrations	yes	-	0.0	0.0	Master Pool	
WISHES - Anna Wedding	yes	-none-			Master Pool	
NEEDS - Health Care	yes	-			Master Pool	
WISHES - Vacation Condo	yes	--INFLOW AMOUNT:			Master Pool	
WANTS - Mary Car	yes	Addition to Anna Grandparents 529 (a)			Master Pool	
WANTS - Bob Car	yes	Addition to Franklin Grandparents 529 (a)			Master Pool	
WANTS - Travel	yes	Additions to Anna's 529 (a)			Master Pool	
WISHES - Anna College	yes	Additions to Bob's 401k (a)			Master Pool	
WISHES - Franklin College	yes	Additions to Franklin's 529 (a)			Master Pool	
WANTS - Lifestyle	yes	Additions to Mary PERS (a)			Master Pool	
		Bob's Other Pre-Retirement Income (a)			Master Pool	
		Business Income - RE Brokerage (a)			Master Pool	
		High School Teaching Income (a)				
		Mary's Pension Income (a)				
		Rental Income (a)				
		Sale of Bob's Business (a)				
		Sale of Rentals (a)				
		Social Security Income - Bob (a)				
		Social Security Income - Mary (a)				
		--OUTFLOW AMOUNT:				
		Anna College (a)				

[Download data]

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Cash flow at risk calculation:
 Use Mortality: Type: -none- Solver: -none- Confidence (%): 5 Calculate all scenarios: [Start]

target allocation
inflation and mortality

Appendix – Detailed Output

➤ Simulation Results – Acceptable Retirement Age

Probability of Failure Report Change Sensitivity Parameters

The possibility of you *not* reaching your goal (probability of failure). You don't reach your goal, when at the *evaluation date* your account balance is negative.

Table on the right shows different account balance possibilities (5%, 10%, 20% worst case, median and best case accordingly).

Scenario	Analysis	Prob. of Failure	Optimum Change	Expected Legacy Value	Expected Shortfall
acceptable retirement age	all goals	0.1333	-	22,758,900	-522.65

[Download data]

Scenario name	Worst 5%	Worst 10%	Worst 20%	Median	Average	Best 20%	Best 10%	Best 5%
all goals	4,566,200	6,614,910	9,605,450	18,111,900	22,758,400	33,069,800	43,994,800	55,925,400

[Download data]

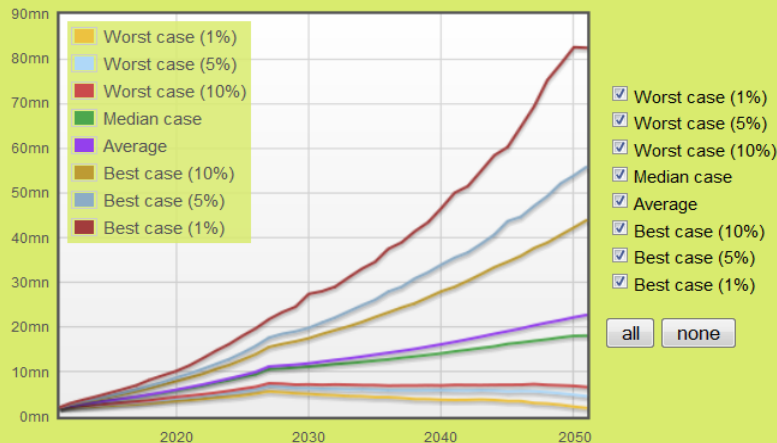
● histogram

● best case, worst case

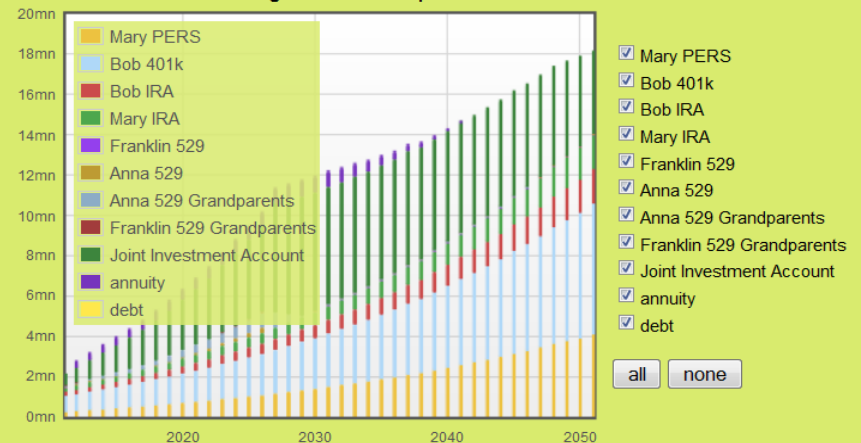
Time evaluation of your total account balance for worst case and best case scenarios.

Time evaluation of your account balances (different accounts), taking the median scenario.

Various scenarios for total account balance



Account Balances through time for the expected scenario



Appendix – Detailed Output

➤ Simulation Results – Ideal Retirement Age

Probability of Failure Report

Change Sensitivity Parameters

The possibility of you *not* reaching your goal (probability of failure). You don't reach your goal, when at the *evaluation date* your account balance is negative.

Table on the right shows different account balance possibilities (5%, 10%, 20% worst case, median and best case accordingly).

Scenario	Analysis	Prob. of Failure	Optimum Change	Expected Legacy Value	Expected Shortfall
ideal retirement age	all goals	49.20	-	6,279,000	-1,105,740

[Download data]

Scenario name	Worst 5%	Worst 10%	Worst 20%	Median Average	Best 20%	Best 10%	Best 5%
all goals	-4,335,890	-3,156,050	-2,156,510	150,767 5,173,260	10,845,900	19,771,200	29,066,300

[Download data]

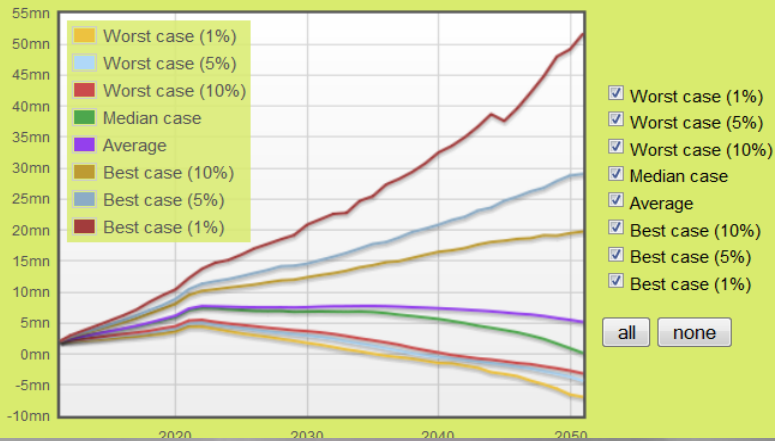
histogram

best case, worst case

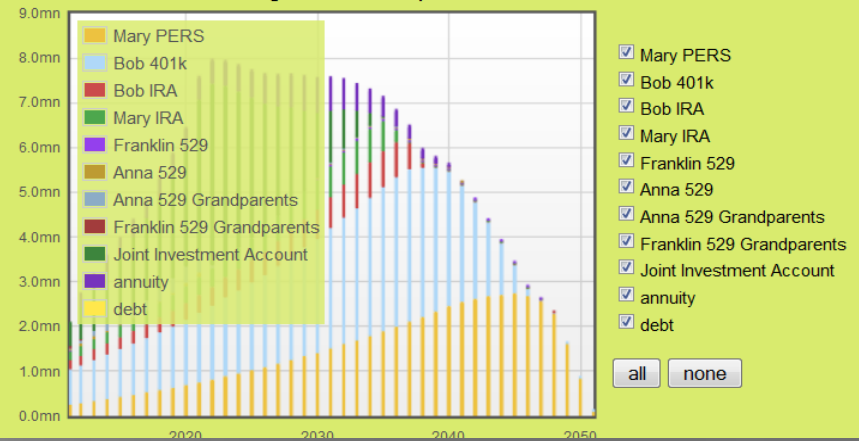
Time evaluation of your total account balance for worst case and best case scenarios.

Time evaluation of your account balances (different accounts), taking the median scenario.

Various scenarios for total account balance



Account Balances through time for the expected scenario



Appendix – Detailed Output

➤ Simulation Results – Ideal Retirement Age Optimized

Probability of Failure Report Change Sensitivity Parameters

The possibility of you *not* reaching your goal (probability of failure). You don't reach your goal, when at the *evaluation date* your account balance is negative.

Table on the right shows different account balance possibilities (5%, 10%, 20% worst case, median and best case accordingly).

Scenario	Analysis	Prob. of Failure	Optimum Change	Expected Legacy Value	Expected Shortfall
ideal retirement age optimized	all goals	40.67	-	-	9,974,690 -627,314

[Download data]

Scenario name	Worst 5%	Worst 10%	Worst 20%	Median	Average	Best 20%	Best 10%	Best 5%
all goals	-2,807,280	-1,624,810	-884,000	1,356,460	9,347,380	12,205,400	24,195,900	43,397,700

[Download data]

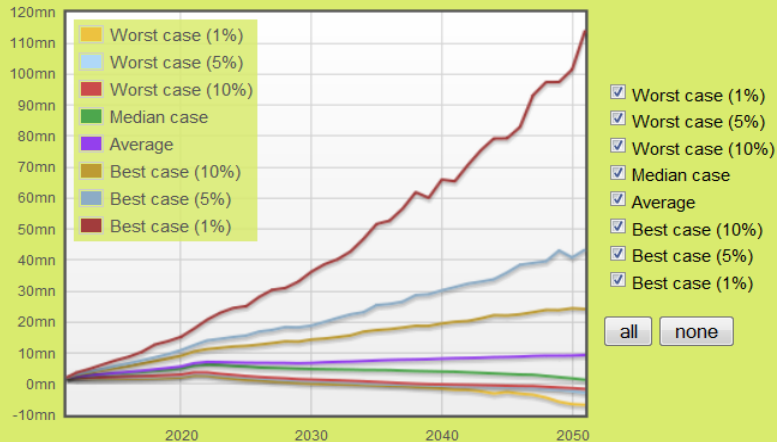
histogram

best case, worst case

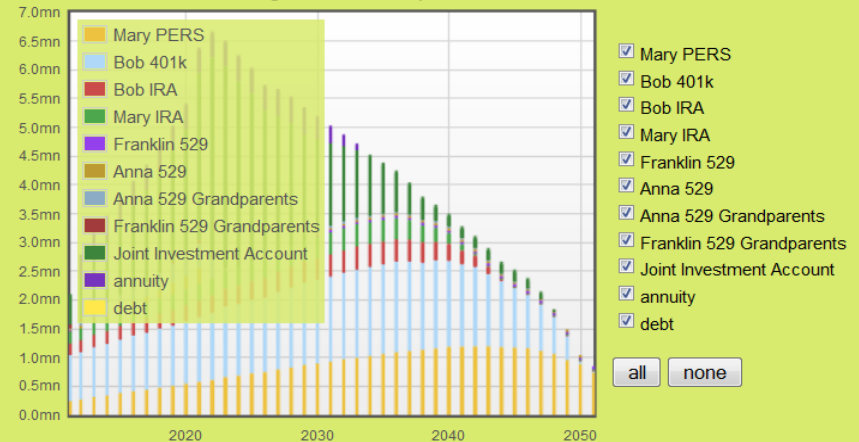
Time evaluation of your total account balance for worst case and best case scenarios.

Time evaluation of your account balances (different accounts), taking the median scenario.

Various scenarios for total account balance



Account Balances through time for the expected scenario



Appendix – Detailed Output

➤ Ideal Retirement Age – Current Allocation – Stressed Returns, Volatilities and Perfect Correlations

Probability of Failure Report

Change Sensitivity Parameters

The possibility of you *not* reaching your goal (probability of failure). You don't reach your goal, when at the *evaluation date* your account balance is negative.

Table on the right shows different account balance possibilities (5%, 10%, 20% worst case, median and best case accordingly).

Scenario	Analysis	Prob. of Failure	Optimum	Change	Expected Legacy Value	Expected Shortfall
ideal retirement age stressed	all goals	80.60	-	-	10,339,100	-3,505,440

[Download data]

Scenario name	Worst 5%	Worst 10%	Worst 20%	Median	Average	Best 20%	Best 10%	Best 5%
all goals	-11,255,000	-6,784,880	-3,810,640	-1,526,920	6,833,640	-257,991	9,061,460	28,345,300

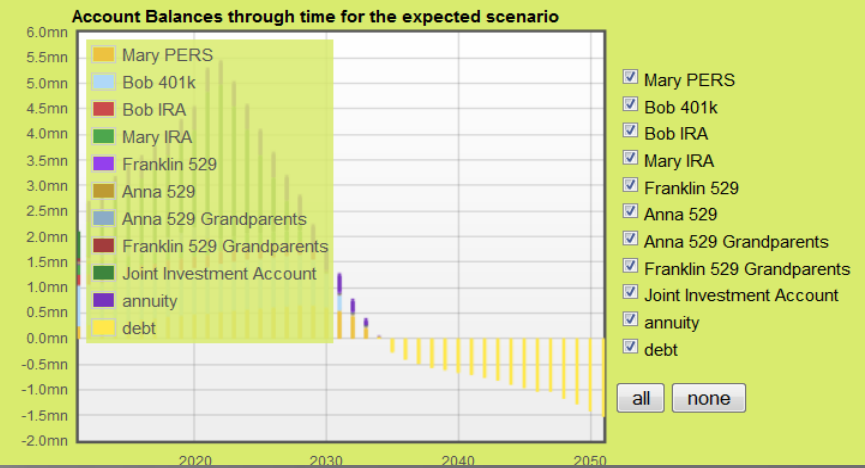
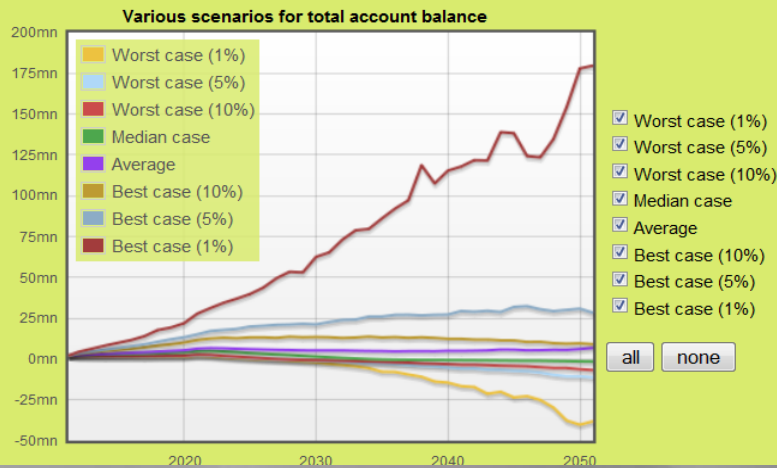
[Download data]

histogram

best case, worst case

Time evaluation of your total account balance for worst case and best case scenarios.

Time evaluation of your account balances (different accounts), taking the median scenario.



Appendix – Detailed Output

➤ Simulation Results – Ideal Retirement Age Optimized Stress

Probability of Failure Report Change Sensitivity Parameters

The possibility of you *not* reaching your goal (probability of failure). You don't reach your goal, when at the *evaluation date* your account balance is negative.

Table on the right shows different account balance possibilities (5%, 10%, 20% worst case, median and best case accordingly).

Scenario	Analysis	Prob. of Failure	Optimum Change		Expected Legacy Value	Expected Shortfall
ideal retirement age optimized stress	all goals	11.83	-	-	14,280,300	-103,836

[Download data]

Scenario name	Worst 5%	Worst 10%	Worst 20%	Median	Average	Best 20%	Best 10%	Best 5%
all goals	-666,621	-230,331	1,048,950	6,455,160	14,176,500	17,813,200	30,164,400	45,481,800

[Download data]

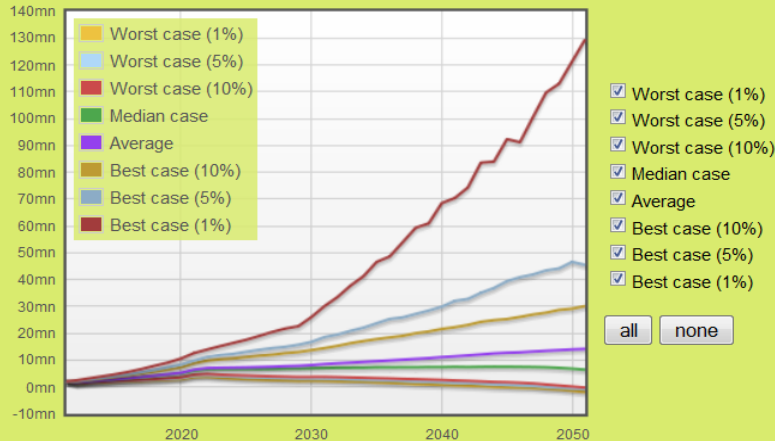
● histogram

● best case, worst case

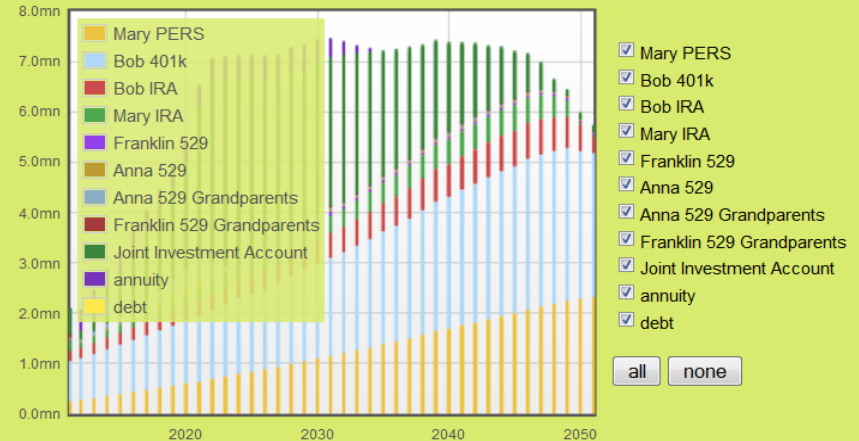
Time evaluation of your total account balance for worst case and best case scenarios.

Time evaluation of your account balances (different accounts), taking the median scenario.

Various scenarios for total account balance



Account Balances through time for the expected scenario



Appendix – Detailed Output

➤ Example of Simulated Cashflows – Ideal Retirement Age Optimized Stress

Scenario	Analysis	Prob. of Failure	Optimum Change		Expected Legacy Value	Expected Shortfall
ideal retirement age optimized stress	all goals	11.83	-	-	14,280,300	-103,836

[Download data]

Scenario name	Worst 5%	Worst 10%	Worst 20%	Median	Average	Best 20%	Best 10%	Best 5%
all goals	-666,621	-230,331	1,048,950	6,455,160	14,176,500	17,813,200	30,164,400	45,481,800

[Download data]

● histogram

● best case, worst case

● cash flow list

aggregated cash flow

cash flow by label

all flows

[5 lines] [15 lines] [50 lines] [150 lines] [400 lines]

Period Start Date	Period End Date	Flow Label	Flow Amount	Flow Account	Mary PERS	Bob 401k	Bob IRA	Mary IRA	Franklin 529	Anna 529	Anna 529 Grandparents	Franklin 529 Grandparents	Joint Investment Account	debt annuity	annuity GIB
2011-01-01	2011-01-01	Addition to Anna Grandparents 52	12,000	Anna 529 Grandparents	-	-	-	-	-	-	-	-	-	-	-
2011-01-01	2011-01-01	Addition to Franklin Grandparent	12,000	Franklin 529 Grandparents	-	-	-	-	-	-	-	-	-	-	-
2011-01-01	2011-01-01	Additions to Anna's 529	12,000	Anna 529	-	-	-	-	-	-	-	-	-	-	-
2011-01-01	2011-01-01	Additions to Bob's 401k	21,999	Bob 401k	-	-	-	-	-	-	-	-	-	-	-
2011-01-01	2011-01-01	Additions to Franklin's 529	12,000	Franklin 529	-	-	-	-	-	-	-	-	-	-	-
2011-01-01	2011-01-01	Additions to Mary PERS	4,500	Mary PERS	-	-	-	-	-	-	-	-	-	-	-
2011-01-01	2011-01-01	Annuity ESIL 1	27,999		-	-	-	-	-	-	-	-	-	-	-
2011-01-01	2011-01-01	Annuity Purchase - Jackson	-700,000		-	-	-	-	-	-	-	-	-	-	-
2011-01-01	2011-01-01	Auto loans - Pre-Retirement	-1,000.00		-	-	-	-	-	-	-	-	-	-	-
2011-01-01	2011-01-01	Bob's Other Pre-Retirement	24,999		-	-	-	-	-	-	-	-	-	-	-

Appendix – Detailed Output

➤ Example of Simulated Balance Distribution – Ideal Retirement Age Optimized Stress

Date	Worst case (1%)	Worst case (5%)	Worst case (10%)	Median case	Average	Best case (10%)	Best case (5%)	Best case (1%)
3/19/2011	2,075,000	2,075,000	2,075,000	2,075,000	2,075,000	2,075,000	2,075,000	2,075,000
1/1/2012	1,707,700	1,861,040	1,955,880	2,373,520	2,432,570	2,970,860	3,184,580	3,710,930
1/1/2013	1,659,990	1,909,150	2,058,370	2,746,630	2,837,190	3,730,940	4,091,360	4,897,380
1/1/2014	1,668,440	1,973,250	2,168,820	3,039,590	3,198,920	4,409,070	4,897,790	6,285,050
1/1/2015	1,703,340	2,055,430	2,284,250	3,354,040	3,569,340	5,106,920	5,830,070	7,645,880
1/1/2016	1,778,440	2,152,330	2,415,770	3,635,840	3,922,210	5,771,320	6,637,470	8,788,350
1/1/2017	1,802,580	2,198,390	2,482,840	3,937,990	4,304,300	6,572,410	7,652,390	10,386,100
1/1/2018	1,871,720	2,314,290	2,626,940	4,281,470	4,744,750	7,388,640	8,580,270	12,729,600
1/1/2019	1,946,780	2,507,130	2,838,380	4,583,320	5,177,620	8,199,150	9,636,930	13,806,700
1/1/2020	2,141,040	2,653,990	3,035,050	5,019,940	5,637,830	9,074,390	10,922,200	15,226,100
1/1/2021	2,785,800	3,352,490	3,741,840	5,958,930	6,699,410	10,493,400	12,526,600	17,867,300
1/1/2022	2,700,920	3,257,870	3,739,830	6,240,910	7,117,620	11,287,700	14,037,400	20,759,700
1/1/2023	2,132,490	2,788,120	3,267,200	6,145,350	7,049,120	11,681,000	14,573,300	22,970,400
1/1/2024	1,716,370	2,422,660	2,916,060	5,819,130	6,951,480	12,096,500	15,161,600	24,521,700
1/1/2025	1,334,220	2,095,750	2,553,650	5,634,280	6,851,980	12,294,200	15,636,400	25,126,700
1/1/2026	1,146,420	1,813,450	2,251,150	5,317,270	6,827,610	12,712,000	16,927,800	28,138,200
1/1/2027	812,860	1,525,470	2,026,150	5,199,540	6,804,270	13,200,100	17,460,400	30,392,300
1/1/2028	594,068	1,292,600	1,832,440	5,064,620	6,780,340	13,762,000	18,390,600	30,988,100
1/1/2029	302,559	1,040,050	1,561,890	4,923,440	6,693,710	13,666,400	18,264,300	33,071,700
1/1/2030	111,116	889,459	1,435,480	4,833,200	6,779,680	14,365,400	18,848,500	36,254,800
1/1/2031	-25,075	758,521	1,305,440	4,772,170	7,000,530	14,660,800	20,055,600	38,643,800
1/1/2032	-137,759	597,977	1,185,440	4,704,800	7,146,390	15,140,600	21,309,400	40,255,700
1/1/2033	-188,638	432,498	1,017,190	4,648,070	7,232,750	15,679,100	22,471,800	42,784,700
1/1/2034	-286,845	224,841	859,303	4,552,890	7,404,620	16,900,200	23,177,400	46,869,800
1/1/2035	-443,137	70,385	651,510	4,527,320	7,600,550	17,398,500	25,479,500	51,655,500
1/1/2036	-571,685	-111,715	454,857	4,491,960	7,736,540	17,693,100	25,830,000	52,731,400
1/1/2037	-690,085	-178,541	256,567	4,320,410	7,845,130	18,203,100	26,578,300	56,637,900
1/1/2038	-989,279	-310,210	74,439	4,184,580	7,907,330	18,783,600	28,699,600	61,920,500
1/1/2039	-1,177,380	-373,794	-63,523	4,105,450	8,018,200	18,750,700	28,955,500	60,107,200
1/1/2040	-1,466,180	-426,761	-127,837	4,016,250	8,175,440	19,529,800	30,214,000	66,007,400
1/1/2041	-1,843,060	-477,371	-225,792	3,960,400	8,309,420	20,075,000	31,268,200	65,457,200
1/1/2042	-1,891,860	-609,548	-288,190	3,756,420	8,392,770	20,334,900	32,384,700	70,714,000
1/1/2043	-2,351,160	-713,197	-383,803	3,595,720	8,489,030	21,172,300	33,035,100	75,458,304
1/1/2044	-3,075,600	-868,881	-459,500	3,413,620	8,642,810	22,201,900	33,815,800	79,280,600
1/1/2045	-2,577,260	-947,892	-558,670	3,216,060	8,711,840	22,106,700	35,975,000	79,295,504
1/1/2046	-3,125,290	-1,112,030	-648,524	3,039,200	8,832,800	22,485,700	38,477,100	82,973,200
1/1/2047	-3,478,360	-1,277,810	-679,278	2,963,280	9,036,610	23,161,900	39,055,400	93,236,400
1/1/2048	-4,381,550	-1,638,000	-924,960	2,587,360	9,141,090	23,915,100	39,630,600	97,481,904
1/1/2049	-5,734,570	-1,846,410	-1,144,550	2,189,660	9,121,150	23,858,500	43,115,000	97,498,304
1/1/2050	-6,512,330	-2,311,880	-1,338,320	1,806,630	9,173,180	24,433,500	40,443,000	101,549,000
1/1/2051	-6,742,780	-2,807,280	-1,624,810	1,356,460	9,347,380	24,195,900	43,397,700	114,209,000


Appendix – Detailed Output

➤ Value at Risk

VaR summary

Total position VaR (returns) in USD listed against different holding periods. Negative number means loss, positive means profit.

The table shows both extreme losses (VaR 1%, VaR 5%; the loss we suffer less than 1% or 5% of the cases) and extreme profits (the profit we realise less than 5% and 1% of the cases) as well as the expected return (that is the median of the return distribution, i.e. 50% of the cases the return is less, 50% of the cases the return is more).

[5 lines] [15 lines] [ Chart]

Horizont (days)	StDev	Var (1%)	CVar (1%)	Var (5%)	CVar (5%)	Mean return	Best profit (5%)	Best profit (1%)
1	6,974	-15,890	-17,350	-11,310	-13,870	310.00	12,030	17,340
2	13,953	-31,590	-34,460	-22,490	-27,570	620.00	24,150	34,920
3	20,940	-47,100	-51,350	-33,560	-41,110	950.00	36,400	52,720
4	24,790	-55,890	-60,500	-39,610	-48,710	790.00	42,910	62,020
5	26,692	-58,890	-64,440	-42,810	-52,570	920.00	45,330	65,350
6	30,201	-65,370	-72,550	-48,200	-59,520	980.00	50,710	74,990
7	34,836	-75,970	-84,700	-55,890	-68,360	1,030	58,480	85,460
8	35,665	-79,300	-86,930	-57,600	-70,130	1,020	61,530	87,510
9	37,682	-82,680	-91,210	-60,230	-73,770	180.00	66,270	94,040
10	40,880	-89,150	-97,570	-64,790	-79,550	-100.00	71,110	102,480
11	43,186	-92,280	-102,780	-68,110	-83,780	-580.00	75,490	106,650
12	44,233	-93,930	-106,610	-69,760	-85,400	-950.00	76,780	113,230
13	46,342	-99,210	-112,640	-72,900	-89,190	-720.00	79,960	117,310
14	49,378	-105,650	-120,610	-77,300	-94,800	50.00	82,710	128,590
15	50,110	-106,570	-121,280	-77,190	-96,030	-120.00	86,240	131,520
16	51,522	-108,390	-123,800	-79,520	-98,140	-740.00	90,550	136,230
23	62,922	-136,690	-151,400	-92,950	-117,770	870.00	111,890	167,330
30	72,576	-143,520	-165,870	-108,920	-131,670	880.00	129,410	201,150
37	81,190	-159,030	-183,970	-117,100	-145,740	3,740	149,400	218,310
44	88,122	-175,820	-198,240	-128,020	-158,390	5,260	156,460	241,610
51	93,538	-181,440	-206,500	-133,860	-164,760	7,270	174,000	250,040
58	100,837	-188,220	-218,130	-143,730	-172,750	6,590	191,400	262,290
65	107,116	-206,570	-231,020	-149,040	-183,680	7,120	203,140	293,030

[Download data]

VaR by position

One week VaR in USD on position level (VaR of 1% confidence, percentage figures not annualized).

Stand alone and Marginal numbers are provided here.

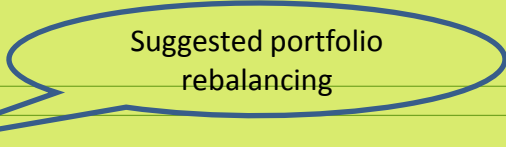
Marginal VaR is the contribution of an extra dollar investment in a given asset to the VaR. *Stand-alone VaR* is the VaR of a single one dollar investment into the given asset

Appendix – Detailed Output

➤ Value at Risk – based suggestions to improve portfolio performance

Upload your data: ?

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Suggested portfolio rebalancing

capital market investments

[5 lines] [15 lines] [add new record]

Name	Code	Direction	Model Type	Price	#Securities	Market Value	Suggested Value	Suggested Change	Strategy	Account Name	
DHY US High Yield Bonds	DHY US High Yield Bonds	Long	ASSET	2.93	13,652	40,000	1,250	-38,750	Master Pool	Bob 401k	✗
DJP Commodities	DJP Commodities	Long	ASSET	49.19	1,626	80,000	250.00	-79,750	Master Pool	Bob 401k	✗
EEM Emerging Markets	EEM Emerging Markets	Long	ASSET	48.20	830	40,000	149,250	109,250	Master Pool	Bob 401k	✗
FBIDX Fidelity US Bond Inde	FBIDX Fidelity US Bond Index	Long	ASSET	11.27	17,746	200,000	466,250	266,250	Master Pool	Mary IRA	✗
FBIDX Fidelity US Bond Inde	FBIDX Fidelity US Bond Index	Long	ASSET	11.27	14,197	160,000	177,500	17,500	Master Pool	Bob 401k	✗
FBIDX Fidelity US Bond Inde	FBIDX Fidelity US Bond Index	Long	ASSET	11.27	22,183	250,000	727,000	477,000	Master Pool	Mary PERS	✗
FBIDX Fidelity US Bond Inde	FBIDX Fidelity US Bond Index	Long	ASSET	11.27	2,218	25,000	42,000	17,000	Master Pool	Joint Investment Account	✗
IWR Mid Cap	IWR Mid Cap	Long	ASSET	102.84	778	80,000	3,250	-76,750	Master Pool	Bob 401k	✗
IWR Mid Cap	IWR Mid Cap	Long	ASSET	102.84	486	50,000	2,250	-47,750	Master Pool	Joint Investment Account	✗
PIGLX Global Bond Fund	PIGLX Global Bond Fund	Long	ASSET	9.69	8,256	80,000	370,000	290,000	Master Pool	Bob 401k	✗
SPY Large Cap	SPY Large Cap	Long	ASSET	127.05	1,259	160,000	500.00	-159,500	Master Pool	Bob 401k	✗
SPY Large Cap	SPY Large Cap	Long	ASSET	127.05	1,574	200,000	2,250	-197,750	Master Pool	Bob IRA	✗
SPY Large Cap	SPY Large Cap	Long	ASSET	127.05	2,558	325,000	4,250	-320,750	Master Pool	Joint Investment Account	✗
TEDMX Developing Markets	TEDMX Developing Markets	Long	ASSET	25.71	4,667	120,000	2.79776E-10	-120,000	Master Pool	Bob 401k	✗
VBK small cap	VBK small cap	Long	ASSET	79.27	631	50,000	1,000.00	-49,000	Master Pool	Joint Investment Account	✗
VBK small cap	VBK small cap	Long	ASSET	79.27	505	40,000	750.00	-39,250	Master Pool	Bob 401k	✗
VDMIX Developed Markets	VDMIX Developed Markets	Long	ASSET	10.04	4,980	50,000	2,250	-47,750	Master Pool	Joint Investment Account	✗

[Download data]

Clear all data first

Risk calculation : Select an Account / Account Pool: Allocation Suggestion: Target Return (%):

var summary

For more, visit Risk Page

[5 lines] [15 lines] [Chart]

Horizon (days) StDev Var (1%) CVar (1%) Var (5%) CVar (5%) Mean return Best profit (5%) Best profit (1%)