Portfolio Report

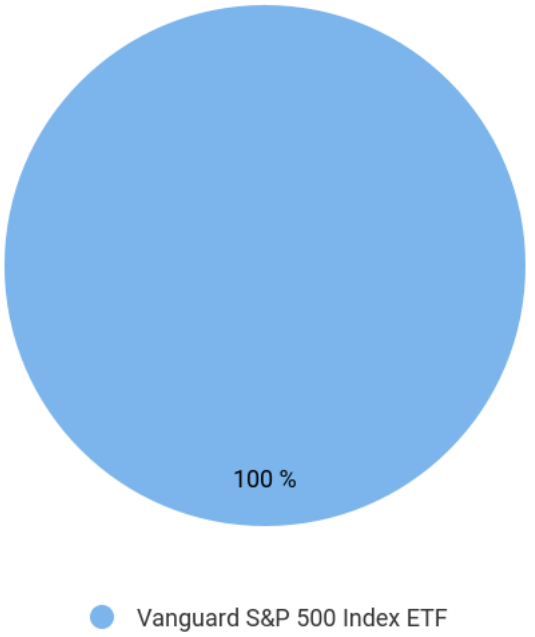
Report Parameters

Start Date	01/01/2014
End Date	12/31/2017
Initial Balance	$1,500
External Cashflows	Contribute $1,500 monthly (inflation adjusted)
Rebalancing	Rebalance monthly
Reinvest Dividends	Yes

Portfolio Report

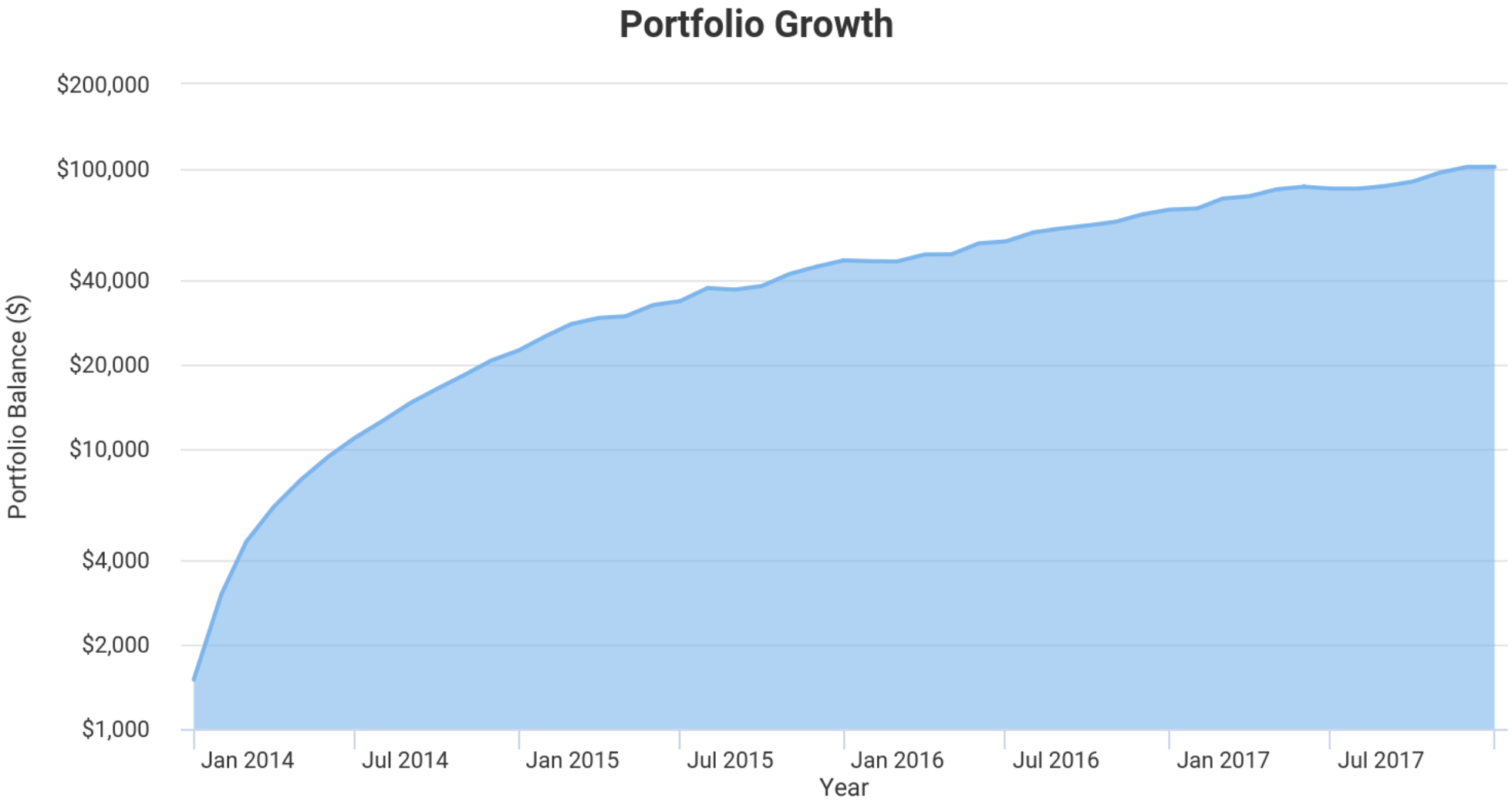
Portfolio 1

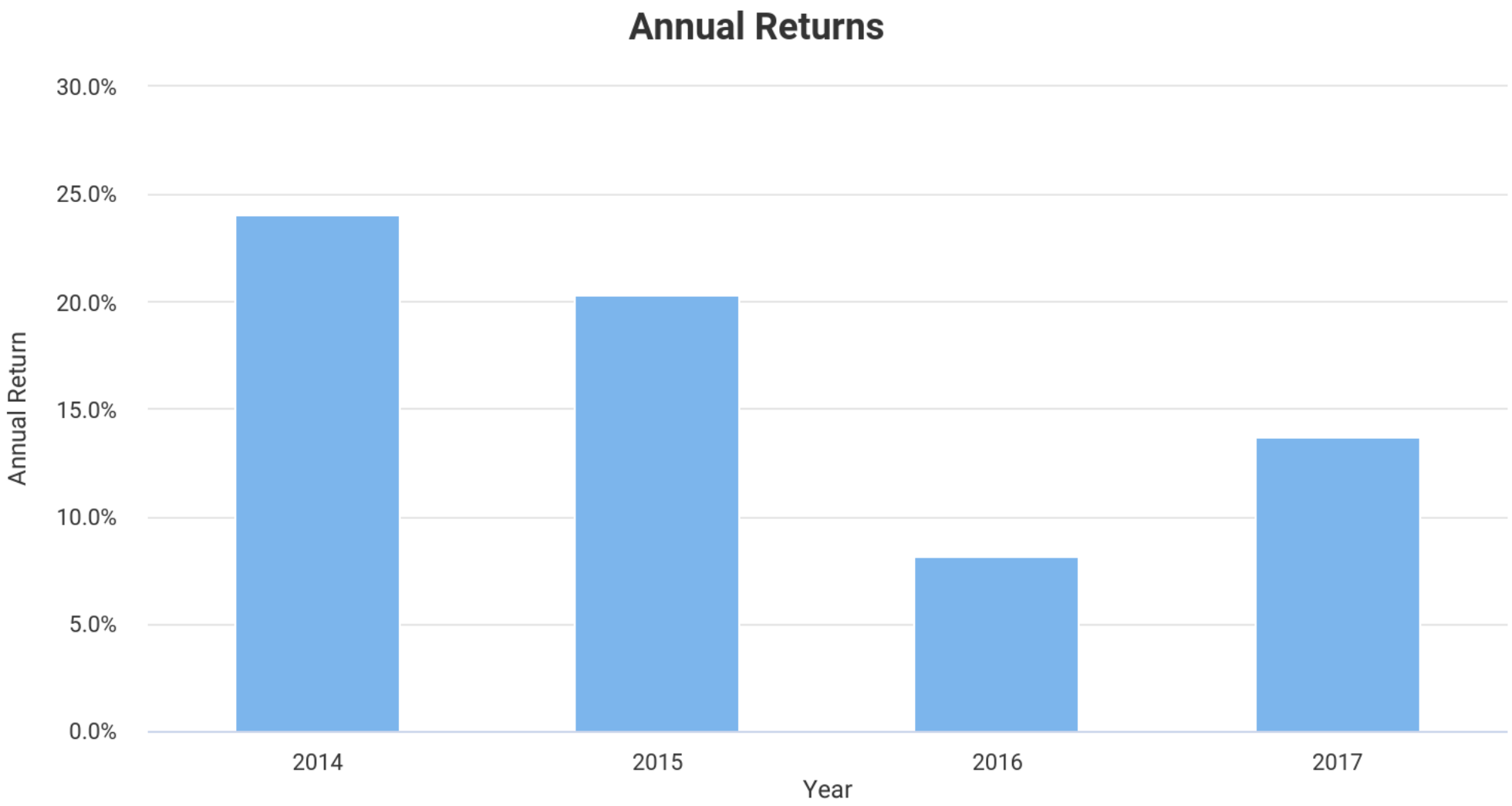
Ticker	Name	Allocation
VFV:CA	Vanguard S&P 500 Index ETF	100.00%



Portfolio Performance (Jan 2014 - Dec 2017)

Metric	Portfolio 1
Start Balance	$1,500
End Balance	$101,581
End Balance (inflation adjusted)	$95,291
Annualized Return (CAGR)	186.87%
Annualized Return (CAGR, inflation adjusted)	182.32%
Time-Weighted Rate of Return (TWRR)	16.38%
Money-Weighted Rate of Return (MWRR)	14.72%
Standard Deviation	10.65%
Best Year	24.05%
Worst Year	8.18%
Maximum Drawdown	-1.62%
Max. Drawdown (excluding cashflows)	-7.92%
Sharpe Ratio	1.40
Sortino Ratio	2.81


Portfolio Growth
$200,000
$100,000
$40,000
$20,000
$10,000
$4,000
$2,000
$1,000
Portfolio Balance ($)
Jan 2014
Jul 2014
Jan 2015
Jul 2015
Jan 2016
Jul 2016
Jan 2017
Jul 2017
Year

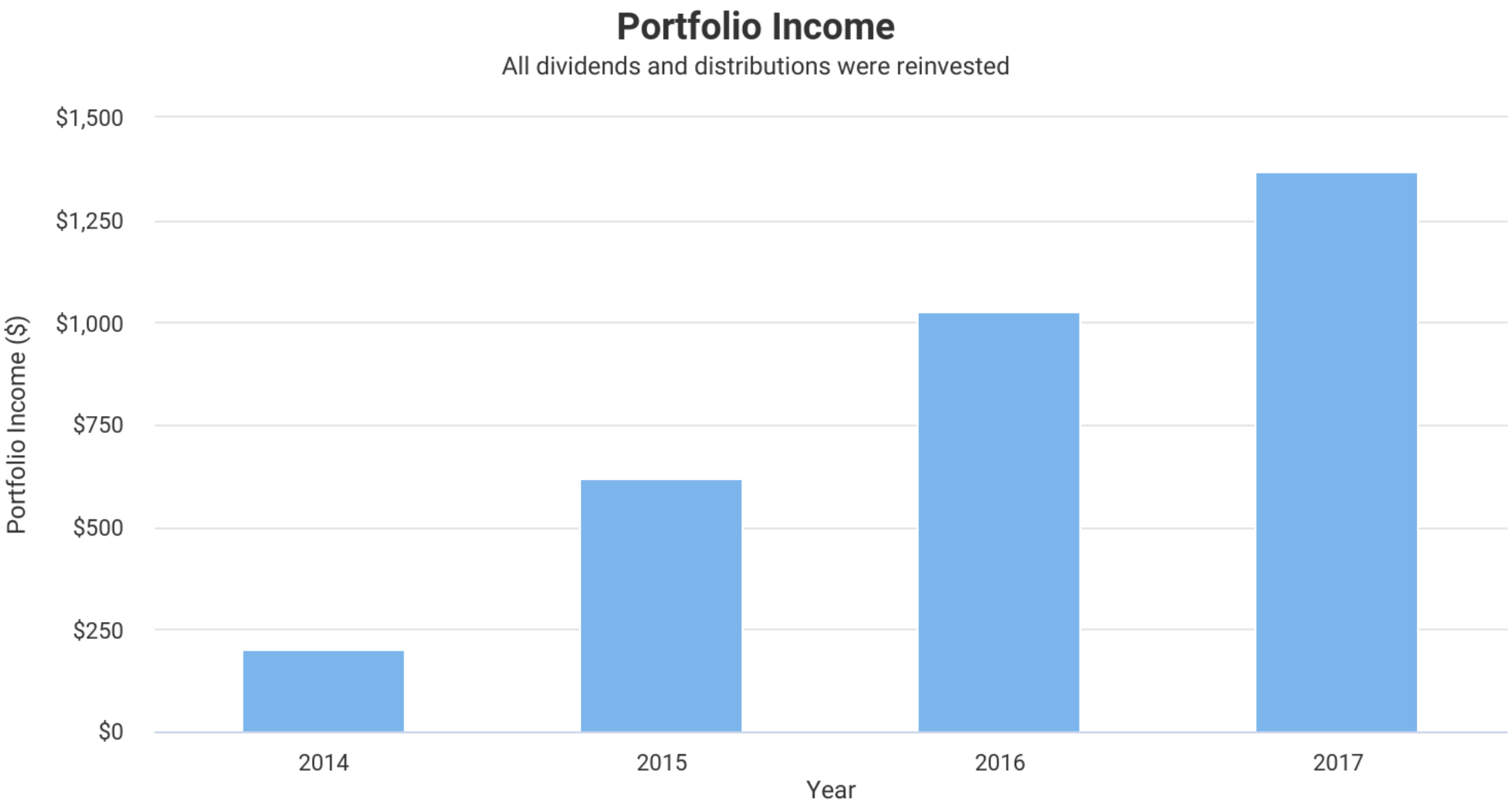

Annual Returns
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
Annual Return
2014
2015
2016
2017
Year

Portfolio Report

Trailing Returns

Name	Total Return			Annualized Return		Annualized Standard Deviation
	3 Month	Year To Date	1 year	3 year	Full	3 year
Portfolio 1	7.58%	13.67%	13.67%	13.94%	16.38%	11.96%

Trailing return and volatility are as of last calendar month ending December 2017


Portfolio Income
All dividends and distributions were reinvested
$1,500
$1,250
$1,000
$750
$500
$250
$0
Portfolio Income ($)
2014
2015
2016
2017
Year

Portfolio Report

Risk and Return Metrics (Jan 2014 - Dec 2017)

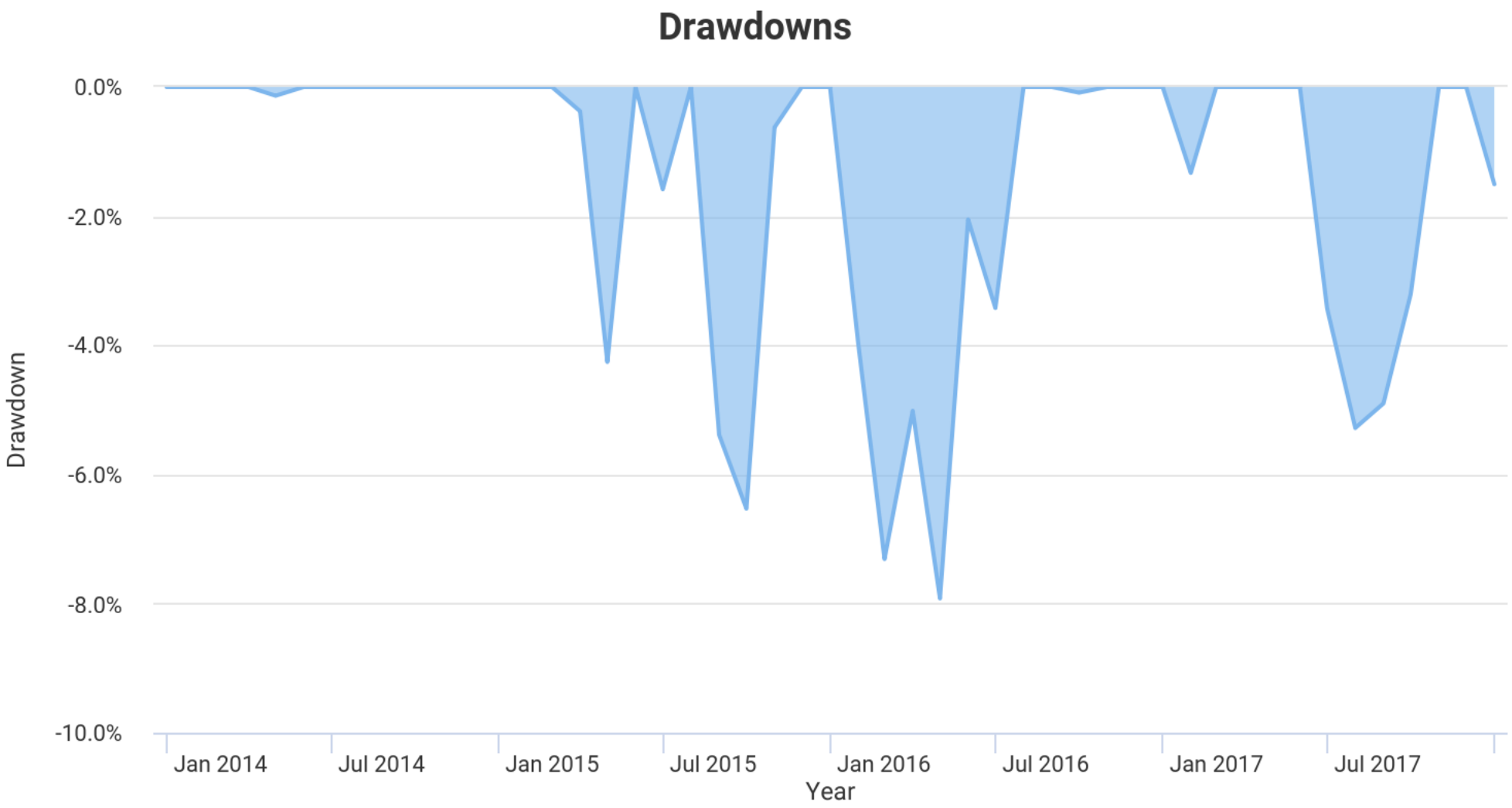
Metric	Portfolio 1
Arithmetic Mean (monthly)	1.32%
Arithmetic Mean (annualized)	17.02%
Geometric Mean (monthly)	1.27%
Geometric Mean (annualized)	16.38%
Standard Deviation (monthly)	3.08%
Standard Deviation (annualized)	10.65%
Downside Deviation (monthly)	1.49%
Maximum Drawdown	-7.92%
Benchmark Correlation	0.56
Beta (*)	0.61
Alpha (annualized)	9.01%
R Squared	30.96%
Sharpe Ratio	1.40
Sortino Ratio	2.81
Treynor Ratio (%)	24.51
Calmar Ratio	1.76
Modigliani–Modigliani Measure	14.61%
Active Return	5.06%
Tracking Error	9.66%
Information Ratio	0.52
Skewness	-0.09
Excess Kurtosis	-0.62
Historical Value-at-Risk (5%)	3.75%
Analytical Value-at-Risk (5%)	3.74%
Conditional Value-at-Risk (5%)	4.42%
Upside Capture Ratio (%)	83.45
Downside Capture Ratio (%)	9.58
Positive Periods	33 out of 48 (68.75%)
Gain/Loss Ratio	1.33

(*) U.S. Stock Market is used as the benchmark for calculations. Value-at-risk metrics are monthly values.

Portfolio 1 Returns

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Inflation	Cashflow	Balance
2014	1.24%	4.00%	0.59%	-0.14%	1.20%	0.44%	0.78%	3.58%	1.81%	2.80%	4.19%	1.37%	24.05%	1.47%	$18,361	$22,462
2015	5.96%	4.11%	-0.38%	-3.90%	4.50%	-1.58%	6.73%	-5.39%	-1.21%	6.32%	2.44%	1.91%	20.28%	1.61%	$18,567	$47,073
2016	-3.96%	-3.48%	2.47%	-3.06%	6.37%	-1.40%	4.89%	0.62%	-0.09%	0.50%	3.84%	1.79%	8.18%	1.50%	$18,833	$71,475
2017	-1.33%	6.19%	0.12%	3.71%	0.33%	-3.43%	-1.92%	0.40%	1.78%	5.98%	3.07%	-1.51%	13.67%	1.87%	$19,133	$101,581

The cashflow column shows the total annual portfolio contributions (positive) and withdrawals (negative).


Drawdowns
0.0%
-2.0%
-4.0%
-6.0%
-8.0%
-10.0%
Drawdown
Jan 2014
Jul 2014
Jan 2015
Jul 2015
Jan 2016
Jul 2016
Jan 2017
Jul 2017
Year

Drawdowns for Portfolio 1

Rank	Start	End	Length	Recovery By	Recovery Time	Underwater Period	Drawdown
1	Jan 2016	Apr 2016	4 months	Jul 2016	3 months	7 months	-7.92%
2	Aug 2015	Sep 2015	2 months	Nov 2015	2 months	4 months	-6.53%
3	Jun 2017	Jul 2017	2 months	Oct 2017	3 months	5 months	-5.28%
4	Mar 2015	Apr 2015	2 months	May 2015	1 month	3 months	-4.26%
5	Jun 2015	Jun 2015	1 month	Jul 2015	1 month	2 months	-1.58%
6	Dec 2017	Dec 2017	1 month				-1.51%
7	Jan 2017	Jan 2017	1 month	Feb 2017	1 month	2 months	-1.33%
8	Apr 2014	Apr 2014	1 month	May 2014	1 month	2 months	-0.14%
9	Sep 2016	Sep 2016	1 month	Oct 2016	1 month	2 months	-0.09%

Notes:

• IMPORTANT: The projections or other information generated by Portfolio Visualizer regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results and are not guarantees of future results. Results may vary with each use and over time.
• The results do not constitute investment advice or recommendation, are provided solely for informational purposes, and are not an offer to buy or sell any securities. All use is subject to terms of service.
• Investing involves risk, including possible loss of principal. Past performance is not a guarantee of future results.
• Asset allocation and diversification strategies do not guarantee a profit or protect against a loss.
• Hypothetical returns do not reflect trading costs, transaction fees, commissions, or actual taxes due on investment returns.
• The results are based on information from a variety of sources we consider reliable, but we do not represent that the information is accurate or complete.
• Refer to the related documentation sections for more details on terms and definitions , methodology , and data sources.
• Portfolio model information represents a blended portfolio consisting of the model's underlying positions and assigned weights provided by the user and rebalanced at the specified schedule. The results were constructed using net of fee mutual fund performance. Portfolio Visualizer does not provide preferential treatment to any specific security or investment.
• The results are based on the total return of assets and assume that all received dividends and distributions are reinvested.
• Market capitalization refers to the total value of all a company's shares of stock. It is calculated by multiplying the price of a stock by its total number of outstanding shares. Large cap refers to a company with a market capitalization value of more than $10 billion, mid cap refers to a company with a market capitalization value between $2 and $10 billion, and small cap refers to a company with a market capitalization value below $2 billion. For funds and portfolios the equity market capitalization is calculated based on the long position of the equity holdings.
• Credit quality measures the ability of a bond issuer to repay a bond's interest and principal in a timely manner. Ratings agencies research the financial health of each bond issuer and assign ratings to the bonds being offered. Lower-rated bonds generally offer higher yields to compensate investors for the additional risk. AAA is the highest possible rating that may be assigned to an issuer's bonds by any of the major credit rating agencies. Bonds rated AAA to AA are known as high-grade bonds, bonds rated A to BBB are known as medium-grade bonds, and bonds rated BB to C are known as non-investment grade bonds. An issuer will receive a rating of D if it is already in default on some of its debt. For funds and portfolios the fixed income credit quality break-down is calculated based on the long position of the fixed income holdings.
• A fixed income maturity date refers to the specific date on which the investor's principal will be repaid. Duration measures a bond's or fixed income portfolio's price sensitivity to interest rate changes. If a bond has a duration of 5 years, and interest rates increase by 1%, the bond's price will decline by approximately 5%. Conversely, if a bond has a duration of 5 years and interest rates fall by 1%, the bond's price will increase by approximately 5%. A fixed income portfolio's duration is computed as the weighted average of individual bond durations held in the portfolio.
• Compound annualized growth rate (CAGR) is the annualized geometric mean return of the portfolio. It is calculated from the portfolio start and end balance and is thus impacted by any cashflows.
• The time-weighted rate of return (TWRR) is a measure of the compound rate of growth in a portfolio. This is calculated from the holding period returns (e.g. monthly returns), and TWRR will thus not be impacted by cashflows. If there are no external cashflows, TWRR will equal CAGR.
• The money-weighted rate of return (MWRR) is the internal rate of return (IRR) taking into account cashflows. This is the discount rate at which the present value of cash inflows equals the present value of cash outflows.
• Total return is the combined return in income and capital appreciation from investment in an asset. Yield measures the current cash income received from investment in an asset. Bonds provide yield in the form of interest payments and stocks through dividends.
• Standard deviation (Stdev) is used to measure the dispersion of returns around the mean and is often used as a measure of risk. A higher standard deviation implies greater the dispersion of data points around the mean.
• Sharpe Ratio is a measure of risk-adjusted performance of the portfolio, and it is calculated by dividing the mean monthly excess return of the portfolio over the risk-free rate by the standard deviation of excess return, and the displayed value is annualized.
• Sortino Ratio is a measure of risk-adjusted return which is a modification of the Sharpe Ratio. While the latter is the ratio of average returns in excess of a risk-free rate divided by the standard deviation of those excess returns, the Sortino Ratio has the same denominator divided by the standard deviation of returns below the risk-free rate.
• Treynor Ratio is a measure of risk-adjusted performance of the portfolio. It is similar to the Sharpe Ratio, but it uses portfolio beta (systematic risk) as the risk metric in the denominator.
• Calmar Ratio is a measure of risk-adjusted performance of the portfolio. It is calculated as the annualized return over the past 36 months divided by the maximum drawdown over the past 36 months based on monthly returns.
• Downside deviation measures the downside volatility of the portfolio returns unlike standard deviation, which includes both upside and downside deviations. Downside deviation is calculated based on negative returns that hurt the portfolio performance.
• Risk-free returns are calculated based on Canada 3-Month Bill.
• Inflation is calculated based on Canada Consumer Price Index.
• Correlation measures to what degree the returns of the two assets move in relation to each other. Correlation coefficient is a numerical value between -1 and +1. If one variable goes up by a certain amount, the correlation coefficient indicates which way the other variable moves and by how much. Asset correlations are calculated based on monthly returns.
• Skewness is a measure of the asymmetry of the probability distribution or returns from a normal Gaussian distribution shape about its mean. Negative skewness is associated with the left (typically negative returns) tail of the distribution extending further than the right tail; and positive skewness is associated with the right (typically positive returns) tail of the distribution extending further than the left tail.
• Excess kurtosis is a measure of whether a data distribution is peaked or flat relative to a normal distribution. Distributions with high kurtosis tend to have a distinct peak near the mean, decline rather rapidly, and have heavy or fat tails.
• A drawdown refers to the decline in value of a single investment or an investment portfolio from a relative peak value to a relative trough. A maximum drawdown (Max Drawdown) is the maximum observed loss from a peak to a trough of a portfolio before a new peak is attained. Drawdown values are calculated based on monthly returns.
• Value at Risk (VaR) measures the scale of loss at a given confidence level. For example, if the 95% confidence one-month VaR is 3%, there is 95% confidence that over the next month the portfolio will not lose more than 3%. Value at Risk can be calculated directly based on historical returns based on a given percentile or analytically based on the mean and standard deviation of the returns.
• Conditional Value at Risk (CVaR) measures the scale of the expected loss once the specific Value at Risk (VaR) breakpoint has been breached, i.e., it calculates the average tail loss by taking a weighted average between the value at risk and losses exceeding the value at risk.
• Beta is a measure of systematic risk and measures the volatility of a particular investment relative to the market or its benchmark. Alpha measures the active return of the investment compared to the market benchmark return. R-squared is the percentage of a portfolio's movements that can be explained by movements in the selected benchmark index.

• Active return is the investment return minus the return of its benchmark. For periods longer than 12 months this is displayed as annualized value, i.e., annualized investment return minus annualized benchmark return.
• Tracking error, also known as active risk, is the standard deviation of active return. This is displayed as annualized value based on the standard deviation of monthly active returns.
• Information ratio is the active return divided by the tracking error. It measures whether the investment outperformed its benchmark consistently.
• Gain/Loss ratio is a measure of downside risk, and it is calculated as the average positive return in up periods divided by the average negative return in down periods.
• Upside Capture Ratio measures how well the fund performed relative to the benchmark when the market was up, and Downside Capture Ratio measures how well the fund performed relative to the benchmark when the market was down. An upside capture ratio greater than 100 would indicate that the fund outperformed its benchmark when the market was up, and a downside capture ratio below 100 would indicate that the fund lost less than its benchmark when the market was down. To calculate upside capture ratio a new series from the portfolio returns is constructed by dropping all time periods where the benchmark return is less than equal to zero. The up capture is then the quotient of the annualized return of the resulting manager series, divided by the annualized return of the resulting benchmark series. The downside capture ratio is calculated analogously.
• All risk measures for the portfolio and portfolio assets are calculated based on monthly returns.
• Gross expense ratio reflects the total annual operating expenses paid by each fund. Net expense ratio reflects what investors were charged after waivers, reductions, and reimbursements.
• Price to earnings (P/E) ratio of a stock is calculated by dividing the current price of the stock by its trailing 12 months' earnings per share. For funds the price to earnings ratio is computed as the weighted average of fund holdings.
• Drawdown analysis is calculated based on monthly returns excluding cashflows.
• The results assume monthly rebalancing of portfolio assets to match the specified allocation.
• Inflation adjusted monthly contribution of $1,500 was applied at the end of each period. This is reflected in the CAGR and maximum drawdown shown above.
• The annual income is calculated from the difference between monthly total returns and split adjusted monthly price changes and thus includes both dividends and capital gains distributions.
• The annual yield as a percentage is based on the portfolio asset allocation and is not impacted by cashflows.