

Summary Prospectus

BlackRock Variable Series Funds, Inc.

- **BlackRock Advantage Large Cap Value V.I. Fund (Class I, Class II, Class III)**

Before you invest, you may want to review the Fund's prospectus, which contains more information about the Fund and its risks. You can find the Fund's prospectus (including amendments and supplements), reports to shareholders and other information about the Fund, including the Fund's statement of additional information, online at <http://www.blackrock.com/prospectus/insurance>. You can also get this information at no cost by calling (800) 537-4942 or by sending an e-mail request to prospectus.request@blackrock.com, or from your financial professional. The Fund's prospectus and statement of additional information, both dated May 1, 2023, as amended and supplemented from time to time, are incorporated by reference into (legally made a part of) this Summary Prospectus.

This Summary Prospectus contains information you should know before investing, including information about risks. Please read it before you invest and keep it for future reference.

The Securities and Exchange Commission has not approved or disapproved these securities or passed upon the adequacy of this Summary Prospectus. Any representation to the contrary is a criminal offense.

Not FDIC Insured • May Lose Value • No Bank Guarantee

Summary Prospectus

Key Facts About BlackRock Advantage Large Cap Value V.I. Fund

Investment Objective

The investment objective of BlackRock Advantage Large Cap Value V.I. Fund (the “Fund”) is to seek long-term capital appreciation.

Fees and Expenses of the Fund

This table describes the fees and expenses that you may pay if you buy, hold and sell shares of the Fund. **The table and example below do not include separate account fees and expenses, and expenses would be higher if these fees and expenses were included.** Please refer to your variable annuity or insurance contract (the “Contract”) prospectus for information on the separate account fees and expenses associated with your Contract.

Shareholder Fees (fees paid directly from your investment)

The Fund is not subject to any shareholder fees.

| Annual Fund Operating Expenses (expenses that you pay each year as a percentage of the value of your investment) | Class I Shares | Class II Shares* | Class III Shares |
|---|-------------------|---------------------|---------------------|
| Management Fees ¹ | 0.75% | 0.75% | 0.75% |
| Distribution and/or Service (1.2b-1) Fees | None | 0.15% | 0.25% |
| Other Expenses | 0.34% | 0.34% ² | 0.37% |
| Total Annual Fund Operating Expenses | 1.09% | 1.24% | 1.37% |
| Fee Waivers and/or Expense Reimbursements ^{1,3} | (0.49)% | (0.49)% | (0.52)% |
| Total Annual Fund Operating Expenses After Fee Waivers and/or Expense Reimbursements ^{1,3} | 0.60% | 0.75% | 0.85% |

* Fund currently active, but no assets in share class as of the fiscal year ended December 31, 2022.

¹ As described in the “Management of the Funds” section of the Fund’s prospectus, BlackRock Advisors, LLC (“BlackRock”) has contractually agreed to waive the management fee with respect to any portion of the Fund’s assets estimated to be attributable to investments in other equity and fixed-income mutual funds and exchange-traded funds managed by BlackRock or its affiliates that have a contractual management fee, through June 30, 2024. In addition, BlackRock has contractually agreed to waive its management fees by the amount of investment advisory fees the Fund pays to BlackRock indirectly through its investment in money market funds managed by BlackRock or its affiliates, through June 30, 2024. The contractual agreements may be terminated upon 90 days’ notice by a majority of the non-interested directors of BlackRock Variable Series Funds, Inc. (the “Company”) or by a vote of a majority of the outstanding voting securities of the Fund.

² Other Expenses of Class II Shares are based on estimated amounts for the current fiscal year.

³ As described in the “Management of the Funds” section of the Fund’s prospectus, BlackRock has contractually agreed to waive and/or reimburse fees or expenses in order to limit Total Annual Fund Operating Expenses After Fee Waivers and/or Expense Reimbursements (excluding Dividend Expense, Interest Expense, Acquired Fund Fees and Expenses and certain other Fund expenses) to 0.60% (for Class I Shares), 0.75% (for Class II Shares) and 0.85% (for Class III Shares) of average daily net assets through June 30, 2024. BlackRock has also contractually agreed to reimburse fees in order to limit certain operational and recordkeeping fees to 0% (for Class I Shares), 0.05% (for Class II Shares) and 0.11% (for Class III Shares) of average daily net assets through June 30, 2024. Each of these contractual agreements may be terminated upon 90 days’ notice by a majority of the non-interested directors of the Company or by a vote of a majority of the outstanding voting securities of the Fund.

Example:

This Example is intended to help you compare the cost of investing in the Fund with the cost of investing in other mutual funds. The Example assumes that you invest \$10,000 in the Fund for the time periods indicated and then redeem all of your shares at the end of those periods. The Example also assumes that your investment has a 5% return each year and that the Fund’s operating expenses remain the same. The Example does not reflect charges imposed by the Contract. See the Contract prospectus for information on such charges. Although your actual costs may be higher or lower, based on these assumptions and the net expenses shown in the fee table, your costs would be:

| | 1 Year | 3 Years | 5 Years | 10 Years |
|------------------|--------|---------|---------|----------|
| Class I Shares | \$61 | \$298 | \$553 | \$1,285 |
| Class II Shares | \$77 | \$345 | \$634 | \$1,457 |
| Class III Shares | \$87 | \$383 | \$700 | \$1,601 |

Portfolio Turnover:

The Fund pays transaction costs, such as commissions, when it buys and sells securities (or “turns over” its portfolio). A higher portfolio turnover rate may indicate higher transaction costs. These costs, which are not reflected in annual fund operating expenses or in the Example, affect the Fund’s performance. During the most recent fiscal year, the Fund’s portfolio turnover rate was 128% of the average value of its portfolio.

Principal Investment Strategies of the Fund

Under normal circumstances, the Fund seeks to invest at least 80% of its net assets, plus the amount of any borrowings for investment purposes, in large cap equity securities of U.S. issuers and derivatives that have similar economic characteristics to such securities. For purposes of the Fund's 80% policy, large cap equity securities are equity securities that at the time of purchase have a market capitalization within the range of companies included in the Russell 1000[®] Value Index. The Fund primarily intends to invest in equity securities, which include common stock, preferred stock and convertible securities, or other financial instruments that are components of, or have characteristics similar to, the securities included in the Russell 1000[®] Value Index. The Russell 1000[®] Value Index is a capitalization-weighted index from a broad range of industries chosen for market size, liquidity and industry group representation. The Fund primarily seeks to buy common stock and may also invest in preferred stock and convertible securities. From time to time, the Fund may invest in shares of companies through "new issues" or initial public offerings ("IPOs").

The Fund may use derivatives, including options, futures, swaps (including, but not limited to, total return swaps, some of which may be referred to as contracts for difference) and forward contracts, both to seek to increase the return of the Fund and to hedge (or protect) the value of its assets against adverse movements in currency exchange rates, interest rates and movements in the securities markets. In order to manage cash flows into or out of the Fund effectively, the Fund may buy and sell financial futures contracts or options on such contracts. Derivatives are financial instruments whose value is derived from another security, a currency or an index, including but not limited to the Russell 1000[®] Value Index. The use of options, futures, swaps and forward contracts can be effective in protecting or enhancing the value of the Fund's assets.

The Fund may seek to provide exposure to the investment returns of real assets that trade in the commodity markets through investment in commodity-linked derivative instruments and investment vehicles such as exchange-traded funds that invest exclusively in commodities and are designed to provide this exposure without direct investment in physical commodities.

The Fund seeks to pursue its investment objective by investing in large cap securities in a disciplined manner, by using proprietary return forecast models that incorporate quantitative analysis. These forecast models are designed to identify aspects of mispricing across stocks which the Fund can seek to capture by over- and under-weighting particular equities while seeking to control incremental risk. BlackRock then constructs and rebalances the portfolio by integrating its investment insights with the model-based optimization process.

Principal Risks of Investing in the Fund

Risk is inherent in all investing. The value of your investment in the Fund, as well as the amount of return you receive on your investment, may fluctuate significantly from day to day and over time. You may lose part or all of your investment in the Fund or your investment may not perform as well as other similar investments. The following is a summary description of the principal risks of investing in the Fund. The relative significance of each risk factor below may change over time and you should review each risk factor carefully.

- **Equity Securities Risk** — Stock markets are volatile. The price of equity securities fluctuates based on changes in a company's financial condition and overall market and economic conditions.
- **Investment Style Risk** — Under certain market conditions, value investments have performed better during periods of economic recovery. Therefore, this investment style may over time go in and out of favor. At times when the investment style used by the Fund is out of favor, the Fund may underperform other equity funds that use different investment styles.
- **Model Risk** — The Fund seeks to pursue its investment objective by using proprietary models that incorporate quantitative analysis. Investments selected using these models may perform differently than as forecasted due to the factors incorporated into the models and the weighting of each factor, changes from historical trends, and issues in the construction and implementation of the models (including, but not limited to, software issues and other technological issues). There is no guarantee that BlackRock's use of these models will result in effective investment decisions for the Fund.

The information and data used in the models may be supplied by third parties. Inaccurate or incomplete data may limit the effectiveness of the models. In addition, some of the data that BlackRock uses may be historical data, which may not accurately predict future market movement. There is a risk that the models will not be successful in selecting investments or in determining the weighting of investment positions that will enable the Fund to achieve its investment objective.

- **Commodities Related Investments Risk** — Exposure to the commodities markets may subject the Fund to greater volatility than investments in traditional securities. The value of commodity-linked derivative investments may be

affected by changes in overall market movements, commodity index volatility, changes in interest rates, or factors affecting a particular industry or commodity, such as drought, floods, weather, embargoes, tariffs and international economic, political and regulatory developments.

■ **Convertible Securities Risk** — The market value of a convertible security performs like that of a regular debt security; that is, if market interest rates rise, the value of a convertible security usually falls. In addition, convertible securities are subject to the risk that the issuer will not be able to pay interest or dividends when due, and their market value may change based on changes in the issuer's credit rating or the market's perception of the issuer's creditworthiness. Since it derives a portion of its value from the common stock into which it may be converted, a convertible security is also subject to the same types of market and issuer risks that apply to the underlying common stock.

■ **Derivatives Risk** — The Fund's use of derivatives may increase its costs, reduce the Fund's returns and/or increase volatility. Derivatives involve significant risks, including:

Leverage Risk — The Fund's use of derivatives can magnify the Fund's gains and losses. Relatively small market movements may result in large changes in the value of a derivatives position and can result in losses that greatly exceed the amount originally invested.

Market Risk — Some derivatives are more sensitive to interest rate changes and market price fluctuations than other securities. The Fund could also suffer losses related to its derivatives positions as a result of unanticipated market movements, which losses are potentially unlimited. Finally, BlackRock may not be able to predict correctly the direction of securities prices, interest rates and other economic factors, which could cause the Fund's derivatives positions to lose value.

Counterparty Risk — Derivatives are also subject to counterparty risk, which is the risk that the other party in the transaction will be unable or unwilling to fulfill its contractual obligation, and the related risks of having concentrated exposure to such a counterparty.

Illiquidity Risk — The possible lack of a liquid secondary market for derivatives and the resulting inability of the Fund to sell or otherwise close a derivatives position could expose the Fund to losses and could make derivatives more difficult for the Fund to value accurately.

Operational Risk — The use of derivatives includes the risk of potential operational issues, including documentation issues, settlement issues, systems failures, inadequate controls and human error.

Legal Risk — The risk of insufficient documentation, insufficient capacity or authority of counterparty, or legality or enforceability of a contract.

Volatility and Correlation Risk — Volatility is defined as the characteristic of a security, an index or a market to fluctuate significantly in price within a short time period. A risk of the Fund's use of derivatives is that the fluctuations in their values may not correlate with the overall securities markets.

Valuation Risk — Valuation for derivatives may not be readily available in the market. Valuation may be more difficult in times of market turmoil since many investors and market makers may be reluctant to purchase complex instruments or quote prices for them.

Hedging Risk — Hedges are sometimes subject to imperfect matching between the derivative and the underlying security, and there can be no assurance that the Fund's hedging transactions will be effective. The use of hedging may result in certain adverse tax consequences.

Tax Risk — Certain aspects of the tax treatment of derivative instruments, including swap agreements and commodity-linked derivative instruments, are currently unclear and may be affected by changes in legislation, regulations or other legally binding authority. Such treatment may be less favorable than that given to a direct investment in an underlying asset and may adversely affect the timing, character and amount of income the Fund realizes from its investments.

Regulatory Risk — Derivative contracts are subject to regulation under the Dodd-Frank Wall Street Reform and Consumer Protection Act (the "Dodd-Frank Act") in the United States and under comparable regimes in Europe, Asia and other non-U.S. jurisdictions. Under the Dodd-Frank Act, with respect to uncleared swaps, swap dealers are required to collect variation margin from the Fund and may be required by applicable regulations to collect initial margin from the Fund. Both initial and variation margin may be comprised of cash and/or securities, subject to applicable regulatory haircuts. Shares of investment companies (other than certain money market funds) may not be posted as collateral under applicable regulations. In addition, regulations adopted by global prudential regulators that are now in effect require certain bank-regulated counterparties and certain of their affiliates to include in certain financial contracts, including many derivatives contracts, terms that delay or restrict the rights of counterparties, such as the Fund, to terminate such contracts, foreclose upon collateral, exercise other default rights or restrict transfers of credit support in the event that the counterparty and/or its affiliates are subject to certain types of resolution or insolvency proceedings. The implementation of these requirements with respect to derivatives, as well

as regulations under the Dodd-Frank Act regarding clearing, mandatory trading and margining of other derivatives, may increase the costs and risks to the Fund of trading in these instruments and, as a result, may affect returns to investors in the Fund.

- **High Portfolio Turnover Risk** — The Fund may engage in active and frequent trading of its portfolio securities. High portfolio turnover (more than 100%) may result in increased transaction costs to the Fund, including brokerage commissions, dealer mark-ups and other transaction costs on the sale of the securities and on reinvestment in other securities. The sale of Fund portfolio securities may result in the realization and/or distribution to shareholders of higher capital gains or losses as compared to a fund with less active trading policies. These effects of higher than normal portfolio turnover may adversely affect Fund performance.
- **Leverage Risk** — Some transactions may give rise to a form of economic leverage. These transactions may include, among others, derivatives, and may expose the Fund to greater risk and increase its costs. The use of leverage may cause the Fund to liquidate portfolio positions when it may not be advantageous to do so to satisfy its obligations or to meet the applicable requirements of the Investment Company Act of 1940, as amended (the “Investment Company Act”), and the rules thereunder. Increases and decreases in the value of the Fund’s portfolio will be magnified when the Fund uses leverage.
- **Market Risk and Selection Risk** — Market risk is the risk that one or more markets in which the Fund invests will go down in value, including the possibility that the markets will go down sharply and unpredictably. The value of a security or other asset may decline due to changes in general market conditions, economic trends or events that are not specifically related to the issuer of the security or other asset, or factors that affect a particular issuer or issuers, exchange, country, group of countries, region, market, industry, group of industries, sector or asset class. Local, regional or global events such as war, acts of terrorism, the spread of infectious illness or other public health issues like pandemics or epidemics, recessions, or other events could have a significant impact on the Fund and its investments. Selection risk is the risk that the securities selected by Fund management will underperform the markets, the relevant indices or the securities selected by other funds with similar investment objectives and investment strategies. The Fund seeks to pursue its investment objective by using proprietary models that incorporate quantitative analysis and is subject to “Model Risk” as described above. This means you may lose money.

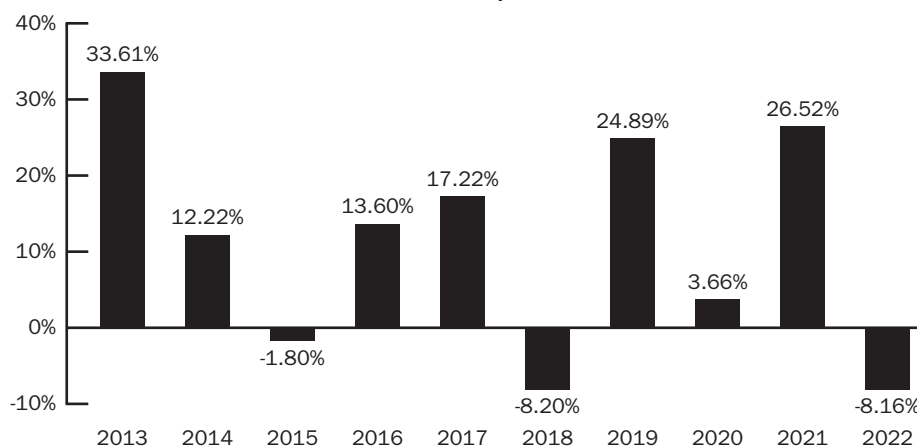
An outbreak of an infectious coronavirus (COVID-19) that was first detected in December 2019 developed into a global pandemic that has resulted in numerous disruptions in the market and has had significant economic impact leaving general concern and uncertainty. Although vaccines have been developed and approved for use by various governments, the duration of the pandemic and its effects cannot be predicted with certainty. The impact of this coronavirus, and other epidemics and pandemics that may arise in the future, could affect the economies of many nations, individual companies and the market in general ways that cannot necessarily be foreseen at the present time.
- **“New Issues” Risk** — “New issues” are IPOs of equity securities. Securities issued in IPOs have no trading history, and information about the companies may be available for very limited periods. In addition, the prices of securities sold in IPOs may be highly volatile or may decline shortly after the IPO.
- **Preferred Securities Risk** — Preferred securities may pay fixed or adjustable rates of return. Preferred securities are subject to issuer-specific and market risks applicable generally to equity securities. In addition, a company’s preferred securities generally pay dividends only after the company makes required payments to holders of its bonds and other debt. For this reason, the value of preferred securities will usually react more strongly than bonds and other debt to actual or perceived changes in the company’s financial condition or prospects. Preferred securities of smaller companies may be more vulnerable to adverse developments than preferred securities of larger companies.
- **Risk of Investing in the United States** — Certain changes in the U.S. economy, such as when the U.S. economy weakens or when its financial markets decline, may have an adverse effect on the securities to which the Fund has exposure.

Performance Information

There are currently no Class II Shares of the Fund outstanding as of the date of this prospectus. The chart and the table shown below give you a picture of the performance for Class I Shares and Class III Shares of the Fund. The performance of the Fund's Class II Shares would be substantially similar to Class I Shares and Class III Shares because Class I Shares, Class II Shares and Class III Shares are invested in the same portfolio of securities and performance would only differ to the extent that Class I Shares, Class II Shares and Class III Shares have different expenses. The actual returns of Class II Shares would have been lower than those of the Class I Shares because Class II Shares have higher expenses than the Class I Shares. The actual returns of Class II Shares would have been higher than those of the Class III Shares because Class II Shares have lower expenses than the Class III Shares.

The information shows you how the Fund's performance has varied year by year and provides some indication of the risks of investing in the Fund. The Fund's returns prior to June 12, 2017 as reflected in the bar chart and the table are the returns of the Fund when it followed different investment strategies under the name "BlackRock Large Cap Value V.I. Fund." The table compares the Fund's performance to that of the Russell 1000[®] Value Index. As with all such investments, past performance is not an indication of future results. The bar chart and table do not reflect separate account fees and expenses. If they did, returns would be less than those shown. To the extent that dividends and distributions have been paid by the Fund, the performance information for the Fund in the chart and table assumes reinvestment of the dividends and distributions. If the Fund's investment manager and its affiliates had not waived or reimbursed certain Fund expenses during these periods, the Fund's returns would have been lower.

Class I Shares ANNUAL TOTAL RETURNS BlackRock Advantage Large Cap Value V.I. Fund As of 12/31



During the ten-year period shown in the bar chart, the highest return for a quarter was 15.38% (quarter ended December 31, 2020) and the lowest return for a quarter was -25.66% (quarter ended March 31, 2020).

For the periods ended 12/31/22 Average Annual Total Returns

| | 1 Year | 5 Years | 10 Years |
|---|---------|---------|----------|
| BlackRock Advantage Large Cap Value V.I. Fund: Class I Shares | (8.16)% | 6.67% | 10.47% |
| BlackRock Advantage Large Cap Value V.I. Fund: Class III Shares | (8.51)% | 6.38% | 10.12% |
| Russell 1000 [®] Value Index (Reflects no deduction for fees, expenses or taxes) | (7.54)% | 6.67% | 10.29% |

Investment Manager

The Fund's investment manager is BlackRock Advisors, LLC (previously defined as "BlackRock").

Portfolio Managers

| Name | Portfolio Manager of the Fund Since | Title |
|-------------------|-------------------------------------|---|
| Raffaele Savi | 2017 | Senior Managing Director of BlackRock, Inc. |
| Travis Cooke, CFA | 2017 | Managing Director of BlackRock, Inc. |
| Richard Mathieson | 2017 | Managing Director of BlackRock, Inc. |

Purchase and Sale of Fund Shares

Shares of the Fund currently are sold either directly or indirectly (through other variable insurance funds) to separate accounts of insurance companies (the “Insurance Companies”) and certain accounts administered by the Insurance Companies (the “Accounts”) to fund benefits under the Contracts issued by the Insurance Companies. Shares of the Fund may be purchased or sold each day the New York Stock Exchange is open.

The Fund does not have any initial or subsequent investment minimums. However, your Contract may require certain investment minimums. See your Contract prospectus for more information.

Tax Information

Distributions made by the Fund to an Account, and exchanges and redemptions of Fund shares made by an Account, ordinarily do not cause the corresponding Contract holder to recognize income or gain for U.S. federal income tax purposes. See the Contract prospectus for information regarding the U.S. federal income tax treatment of the distributions to Accounts and the holders of the Contracts.

Payments to Broker/Dealers and Other Financial Intermediaries

BlackRock and its affiliates may make payments relating to distribution and sales support activities to the Insurance Companies and other financial intermediaries for the sale of Fund shares and related services. These payments may create a conflict of interest by influencing the Insurance Company or other financial intermediary and your individual financial professional to recommend the Fund over another investment. Visit your Insurance Company’s website, which may have more information.

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BlackRock

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