

Summary Prospectus

BlackRock Large Cap Series Funds, Inc. | Class K Shares

- **BlackRock Advantage Large Cap Value Fund**

Class K: MLVKX

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 <https://www.blackrock.com/prospectus>. 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 September 26, 2025, 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 Fund

Investment Objective

The investment objective of BlackRock Advantage Large Cap Value Fund (the “Fund”), a series of BlackRock Large Cap Series Funds, Inc. (the “Corporation”), is to seek long-term capital growth. In other words, the Fund tries to choose investments that will increase in value.

Fees and Expenses of the Fund

This table describes the fees and expenses that you may pay if you buy, hold and sell Class K Shares of the Fund. **You may pay other fees, such as brokerage commissions and other fees to your financial professional or your selected securities dealer, broker, investment adviser, service provider or industry professional (including BlackRock Advisors, LLC (“BlackRock”) and its affiliates) (each, a “Financial Intermediary”), which are not reflected in the table and example below.**

Annual Fund Operating Expenses (expenses that you pay each year as a percentage of the value of your investment)	Class K Shares
Management Fee ¹	0.49%
Distribution and/or Service (12b-1) Fees	None
Other Expenses	0.14%
Total Annual Fund Operating Expenses	0.63%
Fee Waivers and/or Expense Reimbursements ^{1,2}	(0.14)%
Total Annual Fund Operating Expenses After Fee Waivers and/or Expense Reimbursements ^{1,2}	0.49%

¹ As described in the “Management of the Fund” section of the Fund’s prospectus beginning on page 28, 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, 2027. 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, 2027. The contractual agreements may be terminated upon 90 days’ notice by a majority of the non-interested directors of the Corporation or by a vote of a majority of the outstanding voting securities of the Fund.

² As described in the “Management of the Fund” section of the Fund’s prospectus beginning on page 28, 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 0.49% of average daily net assets through June 30, 2027. The contractual agreement may be terminated upon 90 days’ notice by a majority of the non-interested directors of the Corporation 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. Although your actual costs may be higher or lower, based on these assumptions your costs would be:

	1 Year	3 Years	5 Years	10 Years
Class K Shares	\$50	\$188	\$337	\$773

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 and may result in higher taxes when shares are held in a taxable account. 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 120% 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 value equity securities of U.S. issuers and derivatives that provide investment exposure to such securities or to one or more market risk factors associated with such securities. For purposes of the Fund's 80% policy, large cap value equity securities are equity securities that (i) at the time of purchase have a market capitalization within the range of companies included in the Russell 1000® Value Index (the "Russell 1000 Value Index") and (ii) are included within at least one value index, as determined by BlackRock (the "Value Indices"). Currently, such Value Indices are the Russell 3000® Value Index, the S&P Composite 1500® Value Index and the MSCI World Value Index. The Russell 1000 Value Index includes equity securities of issuers which range in size between approximately \$1.037 billion and \$2.587 trillion as of August 31, 2025. The Fund primarily intends to invest in equity securities, which include common stock and preferred stock, or other financial instruments that are components of, or have characteristics similar to, the securities included in the Value Indices. 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. From time to time, the Fund may invest in shares of companies through "new issues" or initial public offerings ("IPOs"). The Fund may also purchase convertible securities. 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 Value Indices. 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 value equity 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, issues related to the use of artificial intelligence and machine learning ("AI"), 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.

■ **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.

■ **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 inflation, 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, principal 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, including the potential for increased volatility in the price of the convertible security.

■ **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.

■ **Financial Services Industry Risk** — Because of its investments in the financial services industry, the Fund will be more susceptible to any economic, business, political or other developments which generally affect this industry sector. As a result, the Fund will be exposed to a large extent to the risks associated with that industry, such as

government regulation, the availability and cost of capital funds (including the availability and stability of deposits in the case of deposit-taking institutions), consolidation and general economic conditions. Financial services companies are also exposed to losses if borrowers and other counterparties experience financial problems and/or cannot repay their obligations.

When interest rates go up, the value of securities issued by many types of financial services companies generally goes down. In many countries, financial services and the companies that provide them are regulated by governmental entities, which can increase costs for new services or products and make it difficult to pass increased costs on to consumers. In certain areas, deregulation of financial services companies has resulted in increased competition and reduced profitability for certain companies.

The profitability of many types of financial services companies may be adversely affected in certain market cycles, including periods of rising interest rates, which may restrict the availability and increase the cost of capital, and declining economic conditions, which may cause credit losses due to financial difficulties of borrowers. Because many types of financial services companies are vulnerable to these economic cycles, the Fund's investments may lose value during such periods.

■ **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, 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.

■ **"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.

■ **Operational and Technology Risks** — The Fund is directly and indirectly susceptible to operational and technology risks, including those related to human errors, processing errors, communication errors, systems failures, cybersecurity incidents, and the use of AI, which may result in losses for the Fund and its shareholders or may impair the Fund's operations. While the Fund's service providers are required to have appropriate operational, information security and cybersecurity risk management policies and procedures, their methods of risk management may differ from those of the Fund. Operational and technology risks for the issuers in which the Fund invests could also result in material adverse consequences for such issuers and may cause the Fund's investments in such issuers to lose value.

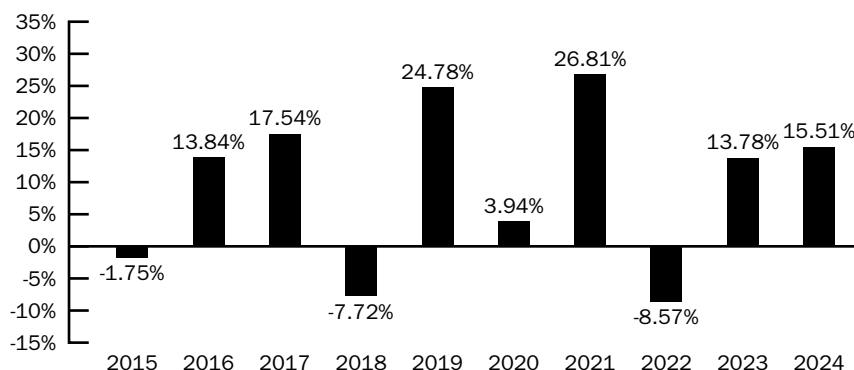
■ **Preferred Securities Risk** — Preferred securities may pay fixed or adjustable rates of return. Preferred securities are subject to issuer-specific and market risks applicable generally to equity securities. In addition, a company's preferred securities generally pay dividends only after the company 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.

Performance Information

Effective June 12, 2017, the Fund changed its name, investment process and investment strategies. Performance for the periods prior to June 12, 2017 shown below is based on the investment process and investment strategies utilized by the Fund at that time under the name “BlackRock Large Cap Value Fund.”

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. Class K Shares commenced operations on January 25, 2018. As a result, the returns shown below for Class K Shares prior to January 25, 2018 are those of the Fund’s Institutional Shares, which are not offered in this prospectus. The performance of Class K Shares would be substantially similar to Institutional Shares because Class K Shares and Institutional Shares are invested in the same portfolio of securities and performance would differ only to the extent that Institutional Shares and Class K Shares have different expenses. The actual returns of Class K Shares would have been higher than those of the Institutional Shares because Class K Shares have lower expenses than the Institutional Shares. The table compares the Fund’s performance to that of the Russell 1000® Index and the Russell 1000 Value Index. The Russell 1000 Value Index is relevant to the Fund because it has characteristics similar to the Fund’s investment strategy. 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. As with all such investments, past performance (before and after taxes) is not an indication of future results. The table includes all applicable fees. If BlackRock and its affiliates had not waived or reimbursed certain Fund expenses during these periods, the Fund’s returns would have been lower. Updated information on the Fund’s performance, including its current net asset value, can be obtained by visiting www.blackrock.com or can be obtained by phone at (800) 882-0052.

Class K Shares
ANNUAL TOTAL RETURNS¹
BlackRock Advantage Large Cap Value Fund
As of 12/31



During the ten-year period shown in the bar chart, the highest return for a quarter was 15.34% (quarter ended December 31, 2020) and the lowest return for a quarter was -25.68% (quarter ended March 31, 2020). The year-to-date return as of June 30, 2025 was 5.49%.

For the periods ended 12/31/24
Average Annual Total Returns

	1 Year	5 Years	10 Years
BlackRock Advantage Large Cap Value Fund — Class K Shares			
Return Before Taxes	15.51%	9.63%	9.14%
Return After Taxes on Distributions	10.65%	7.00%	7.24%
Return After Taxes on Distributions and Sale of Fund Shares	10.38%	6.82%	6.81%
Russell 1000® Index			
(Reflects no deduction for fees, expenses or taxes)	24.51%	14.28%	12.87%
Russell 1000® Value Index			
(Reflects no deduction for fees, expenses or taxes)	14.37%	8.68%	8.49%

¹ A portion of the Fund’s total return for the fiscal years ended September 30, 2016 and 2017 was attributable to proceeds received from a settlement of litigation.

After-tax returns are calculated using the historical highest individual federal marginal income tax rates and do not reflect the impact of state and local taxes. Actual after-tax returns depend on the investor’s tax situation and may differ from those shown, and the after-tax returns shown are not relevant to investors who hold their shares through tax-deferred arrangements, such as 401(k) plans or individual retirement accounts.

Investment Manager

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

Portfolio Managers

Portfolio Manager	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

Class K Shares of the Fund are available only to (i) certain employee benefit plans, such as health savings accounts, and certain employer-sponsored retirement plans (not including SEP IRAs, SIMPLE IRAs and SARSEPs) (collectively, "Employer-Sponsored Retirement Plans"), (ii) collective trust funds, investment companies and other pooled investment vehicles, each of which may purchase shares of the Fund through a Financial Intermediary that has entered into an agreement with the Fund's distributor to purchase such shares, (iii) "Institutional Investors," which include, but are not limited to, endowments, foundations, family offices, banks and bank trusts, local, city, and state governmental institutions, corporations and insurance company separate accounts, each of which may purchase shares of the Fund through a Financial Intermediary that has entered into an agreement with the Fund's distributor to purchase such shares, (iv) clients of private banks that purchase shares of the Fund through a Financial Intermediary that has entered into an agreement with the Fund's distributor to sell such shares; (v) fee-based advisory platforms of a Financial Intermediary that (a) has specifically acknowledged in a written agreement with the Fund's distributor and/or its affiliate(s) that the Financial Intermediary shall offer such shares to fee-based advisory clients through an omnibus account held at the Fund or (b) transacts in the Fund's shares through another intermediary that has executed such an agreement and (vi) any other investors who met the eligibility criteria for BlackRock Shares or Class K Shares prior to August 15, 2016 and have continually held Class K Shares of the Fund in the same account since August 15, 2016.

You may purchase or redeem shares of the Fund each day the New York Stock Exchange is open. Purchase orders may also be placed by calling (800) 537-4942, by mail (c/o BlackRock, P.O. Box 534429, Pittsburgh, Pennsylvania 15253-4429), or online at www.blackrock.com. Institutional Investors are subject to a \$5 million minimum initial investment requirement. Other investors, including Employer-Sponsored Retirement Plans, have no minimum initial investment requirement. There is no minimum investment amount for additional purchases.

Tax Information

Different income tax rules apply depending on whether you are invested through a qualified tax-exempt plan described in section 401(a) of the Internal Revenue Code of 1986, as amended. If you are invested through such a plan (and Fund shares are not "debt-financed property" to the plan), then the dividends paid by the Fund and the gain realized from a redemption or exchange of Fund shares will generally not be subject to U.S. federal income taxes until you withdraw or receive distributions from the plan. If you are not invested through such a plan, then the Fund's dividends and gain from a redemption or exchange may be subject to U.S. federal income taxes and may be taxed as ordinary income or capital gains, unless you are a tax-exempt investor.

Payments to Broker/Dealers and Other Financial Intermediaries

If you purchase shares of the Fund through a Financial Intermediary, the Fund and BlackRock Investments, LLC, the Fund's distributor, or its affiliates may pay the Financial Intermediary for the sale of Fund shares and related services.

These payments may create a conflict of interest by influencing the Financial Intermediary and your individual financial professional to recommend the Fund over another investment.

Class K Shares are only available through a Financial Intermediary if the Financial Intermediary will not receive from Fund assets, or the Fund's distributor's or an affiliate's resources, any commission payments, shareholder servicing fees (including sub-transfer agent and networking fees), or distribution fees (including Rule 12b-1 fees) with respect to assets invested in Class K Shares.

Ask your individual financial professional or visit your Financial Intermediary's website for more information.

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