

John Hancock Multi-Index 2045 Lifetime Portfolio

Summary prospectus 6/21/21

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 and other information about the fund, including the Statement of Additional Information and most recent reports, online at www.jhinvestments.com/prospectuses. You can also get this information at no cost by calling 800-225-5291 or by sending an email request to info@jhinvestments.com. The fund's prospectus and Statement of Additional Information, both dated 6/7/21, as may be supplemented, and most recent financial highlights information included in the shareholder reports, dated 2/28/21 and 8/31/20, are incorporated by reference into this summary prospectus.

TICKERS

A: JHBEX

INVESTMENT OBJECTIVE

To seek high total return through the fund's target retirement date, with a greater focus on income beyond the target date. Total return, commonly understood as the combination of income and capital appreciation, includes interest, capital gains, dividends, and distributions realized over a given period of time.

FEES AND EXPENSES

This table describes the fees and expenses you may pay if you buy, hold, and sell shares of the fund. You may pay other fees, such as brokerage commissions and other fees to financial intermediaries, which are not reflected in the tables and examples below. You may qualify for sales charge discounts on Class A shares if you and your family invest, or agree to invest in the future, at least \$50,000 in the John Hancock family of funds. Intermediaries may have different policies and procedures regarding the availability of front-end sales charge waivers or contingent deferred sales charge (CDSC) waivers (See Appendix 1 - Intermediary sales charge waivers, which includes information about specific sales charge waivers applicable to the intermediaries identified therein). More information about these and other discounts is available from your financial professional and on pages 102 to 104 of the prospectus under "Sales charge reductions and waivers" or pages 104 to 107 of the fund's Statement of Additional Information under "Sales Charges on Class A Shares."

Shareholder fees (%) (fees paid directly from your investment)	A
Maximum front-end sales charge (load) on purchases, as a % of purchase price	5.00
Maximum deferred sales charge (load) as a % of purchase or sale price, whichever is less	1.00 (on certain purchases, including those of \$1 million or more)
Small account fee (for fund account balances under \$1,000) (\$)	20
Annual fund operating expenses (%) (expenses that you pay each year as a percentage of the value of your investment)	A
Management fee	0.24
Distribution and service (Rule 12b-1) fees	0.30
Other expenses ¹	0.24
Acquired fund fees and expenses ²	0.35
Total annual fund operating expenses³	1.13
Contractual expense reimbursement ⁴	-0.39
Total annual fund operating expenses after expense reimbursements	0.74

1 "Other expenses," such as expected transfer agency expenses, have been estimated for the first year of operations of the fund's Class A shares.

2 "Acquired fund fees and expenses" are based on indirect net expenses associated with the fund's investments in underlying investment companies.

3 The "Total annual fund operating expenses" shown may not correlate to the fund's ratios of expenses to average daily net assets shown in the "Financial highlights" section of the fund's prospectus, which does not include "Acquired fund fees and expenses."

4 The advisor contractually agrees to reduce its management fee or, if necessary, make payment to the fund in an amount equal to the amount by which certain expenses, including acquired fund fees, exceed 0.31% of the fund's average daily net assets. This agreement expires on December 31, 2022, unless renewed by mutual agreement of the fund and the advisor based upon a determination that this is appropriate under the circumstances at that time.

EXPENSE 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. Please see below a hypothetical example showing the expenses of a \$10,000 investment for the time periods indicated and then assuming you sell all of your shares at the end of those periods. The example assumes a 5% average annual return and that fund expenses will not change over the periods. Although your actual costs may be higher or lower, based on these assumptions, your costs would be:

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Expenses (\$)	A
1 year	572
3 years	804
5 years	1,055
10 years	1,773

PORTFOLIO TURNOVER

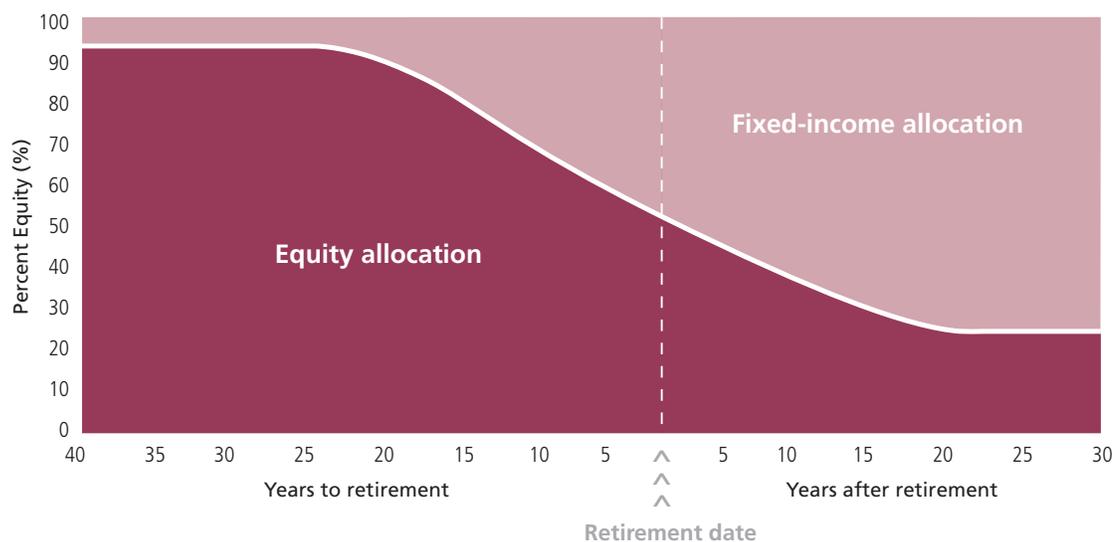
The fund, which operates as a fund of funds and invests in underlying funds, does not pay transaction costs, such as commissions, when it buys and sells shares of underlying funds (or “turns over” its portfolio). An underlying fund does pay transaction costs when it turns over its portfolio, and a higher portfolio turnover rate may indicate higher transaction costs. A higher portfolio turnover rate may result in higher taxes when fund shares are held in a taxable account. These costs, which are not reflected in annual fund operating expenses or in the example, affect the performance of the underlying funds and of the fund. During its most recent fiscal year, the fund’s portfolio turnover rate was 33% of the average value of its portfolio.

PRINCIPAL INVESTMENT STRATEGIES

Under normal market conditions, the fund invests substantially all of its assets in underlying funds using an asset allocation strategy designed for investors expected to retire around the year 2045.

The managers of the fund allocate assets among the underlying funds according to an asset allocation strategy that becomes increasingly conservative over time. John Hancock Multi-Index 2045 Lifetime Portfolio has a target asset allocation of 95% of its assets in underlying funds that invest primarily in equity securities. The fund will have a greater exposure to underlying funds that invest primarily in equity securities than will a John Hancock Multi-Index Lifetime Portfolio with a closer target date. To reduce investment risk and volatility as retirement approaches and in the postretirement years, the asset allocation strategy will change over time according to a predetermined “glide path” shown in the following chart. The fund may be a primary source of income for its shareholders after retirement.

GLIDE PATH CHART



The allocations reflected in the glide path are referred to as target allocations because they do not reflect active decisions made by the managers to produce an overweight or an underweight position in a particular asset class. The fund has a target allocation to underlying funds that invest in the broad asset classes of equity and fixed-income securities, but may also allocate its assets to underlying funds that invest outside these asset classes to protect the fund or help it achieve its objective. For example, the fund may also allocate its assets to underlying funds that invest in alternative and specialty asset classes. The managers may change the target allocation without shareholder approval if they believe that such change would benefit the fund and its shareholders. Under normal circumstances, any deviation from the target allocation is not expected to be greater than plus or minus 10%.

Within the prescribed percentage allocation, the managers select the percentage level to be maintained in specific underlying funds. New investments made by the fund may be directed to particular underlying funds in an effort to maintain the desired target allocations. There is no guarantee that the managers will correctly predict the market or economic conditions and, as with other mutual fund investments, you could lose money even if the fund is at or close to its designated retirement year or in its postretirement stage.

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The fund is designed for investors who may remain invested in the fund through their retirement years. The fund will continue to be managed according to an allocation strategy that becomes increasingly conservative over time until approximately twenty years after retirement, at which time the fund expects to maintain a static allocation of approximately 25% of its assets in equity underlying funds.

The fund may invest in underlying funds that invest in a broad range of equity and fixed-income securities and asset classes. The fund may also invest in underlying funds that invest in alternative/specialty securities and asset classes, including, but not limited to, U.S. and foreign securities, emerging-market securities, commodities, asset-backed securities, small-cap securities, and below-investment-grade securities (i.e., junk bonds). The underlying funds may also use derivatives, such as swaps, foreign currency forwards, futures, and options, in each case for the purposes of reducing risk, obtaining efficient market exposure and/or enhancing investment returns.

The fund will invest in various passively managed underlying funds (commonly known as index funds) that as a group hold a wide range of equity-type securities in their portfolios, including convertible securities. The fund may also invest in various actively managed funds. The fund is not designed to track an index or group of indexes. Equity-type securities include small-, mid-, and large-capitalization stocks, domestic and foreign securities (including emerging-market securities), and sector holdings. Certain equity underlying funds may invest in initial public offerings (IPOs). Each of the equity underlying funds has its own investment strategy that, for example, may focus on growth stocks or value stocks, or may employ a strategy combining growth and income stocks, and/or may invest in derivatives such as credit default swaps, foreign currency forwards, interest rate swaps, options on securities, and futures contracts. Certain of the underlying funds focus their investment strategy on fixed-income securities, which may include investment-grade and below-investment-grade debt securities with maturities that range from shorter to longer term. Below-investment-grade debt securities are also referred to as junk bonds. The fixed-income underlying funds collectively hold various types of debt instruments such as corporate bonds and mortgage-backed, government-issued, domestic, and international securities (including emerging market securities). Certain underlying funds may invest in illiquid securities, and certain underlying funds may be non-diversified.

The fund may invest directly in exchange-traded funds (ETFs), exchange-traded notes (ETNs), the securities of other investment companies, U.S. government securities, and other types of investments such as derivatives, including credit default swaps, options on equity index futures, interest-rate swaps, and foreign currency forward contracts, in each case for the purposes of reducing risk, obtaining efficient market exposure, and/or enhancing investment returns.

To the extent permitted by law, the Board of Trustees of the fund may, in its discretion, determine to combine the fund with another fund without shareholder approval if the target allocation of the fund matches the target allocation of the other fund, although there is no assurance that the Board of Trustees will so determine at any point. The fund bears its own expenses and, in addition, indirectly bears its proportionate share of the expenses of the underlying funds in which it invests. The fund's performance reflects both the managers' allocation decisions and the performance of the underlying funds.

PRINCIPAL RISKS

An investment in the fund is not a bank deposit and is not insured or guaranteed by the Federal Deposit Insurance Corporation or any other government agency. Many factors affect performance, and fund shares will fluctuate in price, meaning you could lose money. The fund's investment strategy may not produce the intended results.

During periods of heightened market volatility or reduced liquidity, governments, their agencies, or other regulatory bodies, both within the United States and abroad, may take steps to intervene. These actions, which could include legislative, regulatory, or economic initiatives, might have unforeseeable consequences and could adversely affect the fund's performance or otherwise constrain the fund's ability to achieve its investment objective.

Because this fund has a greater exposure to underlying funds that invest primarily in equity securities than John Hancock Multi-Index Lifetime Portfolios with closer target dates, equity security risks are more prevalent in this fund than in these other target-date funds. In addition to equity securities risk, the fund's other main risk factors are listed below in alphabetical order, not in order of importance. *Before investing, be sure to read the additional descriptions of these risks beginning on page 73 of the prospectus.*

Principal risks of investing in the fund of funds

Credit and counterparty risk. The counterparty to an over-the-counter derivatives contract or a borrower of fund securities may not make timely payments or otherwise honor its obligations. U.S. government securities are subject to varying degrees of credit risk based on the nature of their support.

Cybersecurity and operational risk. Cybersecurity breaches may allow an unauthorized party to gain access to fund assets, customer data, or proprietary information, or cause a fund or its service providers to suffer data corruption or lose operational functionality. Similar incidents affecting issuers of a fund's securities may negatively impact performance. Operational risk may arise from human error, error by third parties, communication errors, or technology failures, among other causes.

Economic and market events risk. Events in the U.S. and global financial markets, including actions taken by the U.S. Federal Reserve or foreign central banks to stimulate or stabilize economic growth, may at times result in unusually high market volatility, which could negatively impact performance. Reduced liquidity in credit and fixed-income markets could adversely affect issuers worldwide. Banks and financial services companies could suffer losses if interest rates rise or economic conditions deteriorate.

Exchange-traded funds risk. An ETF generally reflects the risks of the underlying securities of the index it is designed to track. However, at times, an ETF's portfolio composition and performance may not match that of such index. A fund bears ETF fees and expenses indirectly.

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Exchange-traded notes risk. An ETN generally reflects the risks associated with the assets composing the underlying market benchmark or strategy it is designed to track. ETNs also are subject to issuer and fixed-income risks.

Fund of funds risk. The fund's ability to achieve its investment objective will depend largely, in part, on: (i) the underlying funds' performance, expenses and ability to meet their investment objectives; and (ii) properly rebalancing assets among underlying funds and different asset classes. The fund is also subject to risks related to: (i) layering of fees of the underlying funds; and (ii) conflicts of interest associated with the subadvisor's ability to allocate fund assets without limit to other funds it advises and/or other funds advised by affiliated subadvisors. There is no assurance that either the fund or the underlying funds will achieve their investment objectives. A fund bears underlying fund fees and expenses indirectly.

Hedging, derivatives, and other strategic transactions risk. Hedging, derivatives, and other strategic transactions may increase a fund's volatility and could produce disproportionate losses, potentially more than the fund's principal investment. Risks of these transactions are different from and possibly greater than risks of investing directly in securities and other traditional instruments. Under certain market conditions, derivatives could become harder to value or sell and may become subject to liquidity risk (i.e., the inability to enter into closing transactions). Derivatives and other strategic transactions that the fund intends to utilize include: credit default swaps, foreign currency forward contracts, futures contracts, interest-rate swaps, and options. Foreign currency forward contracts, futures contracts, options, and swaps generally are subject to counterparty risk. In addition, swaps may be subject to interest-rate and settlement risk, and the risk of default of the underlying reference obligation. Derivatives associated with foreign currency transactions are subject to currency risk.

Investment company securities risk. Underlying fund fees and expenses associated with investments in other investment companies are borne by fund shareholders.

Lifecycle risk. Managers might not correctly predict market or economic conditions, and you could lose money even close to, during, or after the fund's designated retirement year.

Target allocation risk. The fund's risk profile will change due to reallocation or rebalancing of portfolio assets as the fund approaches its target date.

Principal risks of investing in the underlying funds

Equity securities risk. The price of equity securities may decline due to changes in a company's financial condition or overall market conditions. Growth company securities may fluctuate more in price than other securities because of the greater emphasis on earnings expectations. Securities the manager believes are undervalued may never realize their full potential value, and in certain markets value stocks may underperform the market as a whole.

Commodity risk. Commodity prices may be volatile due to fluctuating demand, supply disruption, speculation, and other factors. Certain commodity investments may have no active trading market at times.

Credit and counterparty risk. The issuer or guarantor of a fixed-income security, the counterparty to an over-the-counter derivatives contract, or a borrower of fund securities may not make timely payments or otherwise honor its obligations. U.S. government securities are subject to varying degrees of credit risk depending upon the nature of their support. A downgrade or default affecting any of the fund's securities could affect the fund's performance.

Cybersecurity and operational risk. Cybersecurity breaches may allow an unauthorized party to gain access to fund assets, customer data, or proprietary information, or cause a fund or its service providers to suffer data corruption or lose operational functionality. Similar incidents affecting issuers of a fund's securities may negatively impact performance. Operational risk may arise from human error, error by third parties, communication errors, or technology failures, among other causes.

Economic and market events risk. Events in the U.S. and global financial markets, including actions taken by the U.S. Federal Reserve or foreign central banks to stimulate or stabilize economic growth, may at times result in unusually high market volatility, which could negatively impact performance. Reduced liquidity in credit and fixed-income markets could adversely affect issuers worldwide. Banks and financial services companies could suffer losses if interest rates rise or economic conditions deteriorate.

Fixed-income securities risk. A rise in interest rates typically causes bond prices to fall. The longer the average maturity or duration of the bonds held by a fund, the more sensitive it will likely be to interest-rate fluctuations. An issuer may not make all interest payments or repay all or any of the principal borrowed. Changes in a security's credit quality may adversely affect fund performance.

Foreign securities risk. Less information may be publicly available regarding foreign issuers. Foreign securities may be subject to foreign taxes and may be more volatile than U.S. securities. Currency fluctuations and political and economic developments may adversely impact the value of foreign securities. The risks of investing in foreign securities are magnified in emerging markets. Any depositary receipts are subject to most of the risks associated with investing in foreign securities directly because the value of a depositary receipt is dependent upon the market price of the underlying foreign equity security. Depositary receipts are also subject to liquidity risk.

Hedging, derivatives, and other strategic transactions risk. Hedging, derivatives, and other strategic transactions may increase a fund's volatility and could produce disproportionate losses, potentially more than the fund's principal investment. Risks of these transactions are different from and possibly greater than risks of investing directly in securities and other traditional instruments. Under certain market conditions, derivatives could become harder to value or sell and may become subject to liquidity risk (i.e., the inability to enter into closing transactions). Derivatives and other strategic transactions that a fund may utilize include: credit default swaps, foreign currency forward contracts, futures contracts, interest-rate swaps, and options. Foreign currency forward contracts, futures contracts, options, and swaps generally are subject to counterparty risk. In addition, swaps may be subject to interest-rate and settlement risk, and the risk of default of the underlying reference obligation. Derivatives associated with foreign currency transactions are subject to currency risk.

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Illiquid and restricted securities risk. Illiquid and restricted securities may be difficult to value and may involve greater risks than liquid securities. Illiquidity may have an adverse impact on a particular security's market price and the fund's ability to sell the security.

Inflation-protected securities risk. Increases in real interest rates generally cause the price of inflation-protected debt securities to decrease.

Initial public offerings risk. IPO share prices are frequently volatile and may significantly impact fund performance.

Large company risk. Larger companies may grow more slowly than smaller companies or be slower to respond to business developments. Large-capitalization securities may underperform the market as a whole.

Liquidity risk. The extent (if at all) to which a security may be sold or a derivative position closed without negatively impacting its market value may be impaired by reduced market activity or participation, legal restrictions, or other economic and market impediments. Liquidity risk may be magnified in rising interest rate environments due to higher than normal redemption rates. Widespread selling of fixed-income securities to satisfy redemptions during periods of reduced demand may adversely impact the price or salability of such securities. Periods of heavy redemption could cause the fund to sell assets at a loss or depressed value, which could negatively affect performance. Redemption risk is heightened during periods of declining or illiquid markets.

Lower-rated and high-yield fixed-income securities risk. Lower-rated and high-yield fixed-income securities (junk bonds) are subject to greater credit quality risk, risk of default, and price volatility than higher-rated fixed-income securities, may be considered speculative, and can be difficult to resell.

Mortgage-backed and asset-backed securities risk. Mortgage-backed and asset-backed securities are subject to different combinations of prepayment, extension, interest-rate, and other market risks. Factors that impact the value of these securities include interest rate changes, the reliability of available information, credit quality or enhancement, and market perception.

Non-diversified risk. Adverse events affecting a particular issuer or group of issuers may magnify losses for non-diversified funds, which may invest a large portion of assets in any one issuer or a small number of issuers.

Preferred and convertible securities risk. Preferred stock dividends are payable only if declared by the issuer's Board. Preferred stock may be subject to redemption provisions. The market values of convertible securities tend to fall as interest rates rise and rise as interest rates fall. Convertible preferred stock's value can depend heavily upon the underlying common stock's value.

Sector risk. When a fund focuses its investments in certain sectors of the economy, its performance may be driven largely by sector performance and could fluctuate more widely than if the fund were invested more evenly across sectors.

Small and mid-sized company risk. Small and mid-sized companies are generally less established and may be more volatile than larger companies. Small and/or mid-capitalization securities may underperform the market as a whole.

PAST PERFORMANCE

The following information illustrates the variability of the fund's returns and provides some indication of the risks of investing in the fund by showing changes in the fund's performance from year to year and by showing how the fund's average annual returns compared with a broad-based market index. Past performance (before and after taxes) does not indicate future results. All figures assume dividend reinvestment. Performance information is updated daily, monthly, and quarterly and may be obtained at our website, jhinvestments.com, or by calling 800-225-5291, Monday to Thursday, 8:00 A.M.—7:00 P.M., and Friday, 8:00 A.M.—6:00 P.M., Eastern time, on most business days.

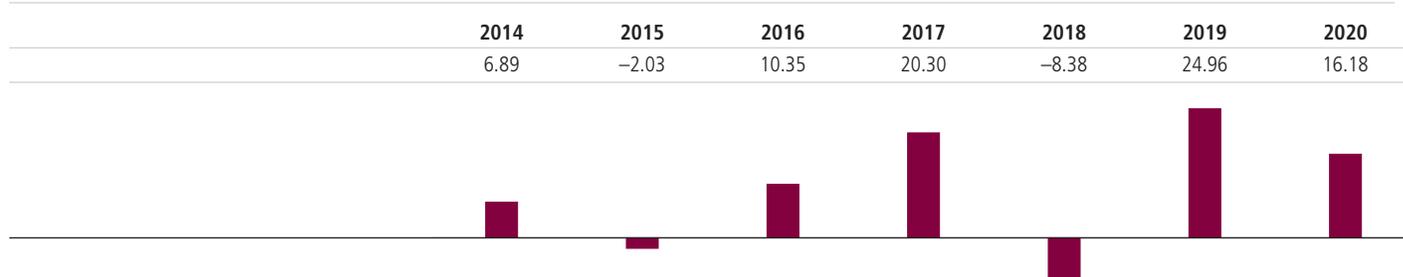
A note on performance

Class 1 shares commenced operations on November 7, 2013. Because Class A shares of the fund had not commenced operations as of the date of this prospectus, the returns shown are those of Class 1 shares, except that they include any sales charges. Returns for Class A shares would have been substantially similar to returns of Class 1 shares because each share class is invested in the same portfolio of securities and returns would differ only to the extent that expenses of the classes are different. To the extent expenses of a class would have been higher than expenses of Class 1 shares for the periods shown, performance would have been lower.

Please note that after-tax returns (shown for Class A shares only) reflect the highest individual federal marginal income-tax rate in effect as of the date provided and do not reflect any state or local taxes. Your actual after-tax returns may be different. After-tax returns are not relevant to shares held in an IRA, 401(k), or other tax-advantaged investment plan. After-tax returns for other share classes would vary.

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Calendar year total returns (%)—Class A (sales charges are not reflected in the bar chart and returns would have been lower if they were)



Year-to-date total return. The fund's total return for the three months ended March 31, 2021, was 5.33%.

Best quarter: Q2 2020, 18.98%

Worst quarter: Q1 2020, -20.59%

Average annual total returns (%)—as of 12/31/20	1 year	5 year	Since inception (11/07/13)
Class A (before tax)	10.38	10.89	8.89
after tax on distributions	9.00	8.79	6.98
after tax on distributions, with sale	6.59	7.94	6.35
S&P Target Date 2045 Index (reflects no deduction for fees, expenses, or taxes)	13.66	11.24	8.97
John Hancock 2045 Lifetime Index (reflects no deduction for fees, expenses, or taxes)*	13.22	13.71	10.85

* Each of the John Hancock Lifetime Indices is a customized blended index comprising some or all of the following component indices (ordered alphabetically): Bloomberg Barclays U.S. Aggregate Bond Index, Bloomberg Barclays U.S. Corporate Bond 1-5 Year Index, Bloomberg Barclays U.S. Treasury TIPS 1-5 Year Index, ICE BofA Long U.S. Treasury Principal STRIPS Index, ICE BofA U.S. High Yield Index, JP Morgan Emerging Markets Bond Index Global, MSCI Emerging Markets Index, MSCI World Energy Index, MSCI World ex-USA Index, MSCI World Metals & Mining Index, Russell 2500 Index, S&P 500 Index, S&P Global ex-U.S. REIT Index, S&P Global Infrastructure Index, S&P U.S. REIT Index, and S&P/LSTA Leveraged Loan Index. Component index weightings are adjusted annually to reflect changes in the fund's target asset allocation in accordance with the annual roll-down of the fund's glide path.

INVESTMENT MANAGEMENT

Investment advisor John Hancock Investment Management LLC

Subadvisor Manulife Investment Management (US) LLC

PORTFOLIO MANAGEMENT

Robert E. Sykes, CFA

Managing Director and Portfolio Manager, Asset Allocation Team

Managed the fund since 2018

Nathan W. Thooft, CFA

Senior Managing Director, Senior Portfolio Manager and Global Head of Asset Allocation

Managed the fund since 2013

PURCHASE AND SALE OF FUND SHARES

The minimum initial investment requirement for Class A shares of the fund is \$1,000 (\$250 for group investments), except that there is no minimum for certain group retirement plans, certain fee-based or wrap accounts, or certain other eligible investment product platforms. There are no subsequent minimum investment requirements.

Class A shares may be redeemed on any business day by mail: John Hancock Signature Services, Inc., P.O. Box 219909, Kansas City, MO 64121-9909; or for most account types through our website: jhinvestments.com; or by telephone: 800-225-5291.

TAXES

The fund's distributions are taxable, and will be taxed as ordinary income and/or capital gains, unless you are investing through a tax-deferred arrangement, such as a 401(k) plan or individual retirement account. Withdrawals from such tax-deferred arrangements may be subject to tax at a later date.

PAYMENTS TO BROKER-DEALERS AND OTHER FINANCIAL INTERMEDIARIES

If you purchase the fund through a broker-dealer or other financial intermediary (such as a bank, registered investment advisor, financial planner, or retirement plan administrator), the fund and its related companies may pay the broker-dealer or other intermediary for the sale of fund shares and related services. These payments may create a conflict of interest by influencing the broker-dealer or other intermediary and your salesperson to recommend the fund over another investment. Ask your salesperson or visit your financial intermediary's website for more information.

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