

Putnam VT High Yield Fund

Prospectus

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This prospectus explains what you should know about Putnam VT High Yield Fund, one of the funds of Putnam Variable Trust, which is available for purchase by separate accounts of insurance companies. Please read it carefully. Certain shares of other funds of the Trust are offered through other prospectuses.

These securities have not been approved or disapproved by the Securities and Exchange Commission (SEC) nor has the SEC passed upon the accuracy or adequacy of this prospectus. Any statement to the contrary is a crime.

Fund summary

Goal

Putnam VT High Yield Fund seeks high current income. Capital growth is a secondary goal when consistent with achieving high current income.

Fees and expenses

The following 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. The fees and expenses information does not reflect insurance-related charges or expenses borne by contract holders indirectly investing in the fund. If it did, expenses would be higher.

Annual fund operating expenses

(expenses you pay each year as a percentage of the value of your investment)

Share class	Management fees	Distribution and service (12b-1) fees	Other expenses*	Total annual fund operating expenses
Class IA	0.56%	N/A	0.18%	0.74%
Class IB	0.56%	0.25%	0.18%	0.99%

* Restated to reflect current fees.

Example

The following hypothetical example is intended to help you compare the cost of investing in the fund with the cost of investing in other funds. The example does not reflect insurance-related charges or expenses. If it did, expenses would be higher. It assumes that you invest \$10,000 in the fund for the time periods indicated and then redeem or hold all your shares at the end of those periods. It assumes a 5% return on your investment each year and that the fund's operating expenses remain the same. Your actual costs may be higher or lower.

Share class	1 year	3 years	5 years	10 years
Class IA	\$76	\$237	\$411	\$918
Class IB	\$101	\$315	\$547	\$1,213

Portfolio turnover

The fund pays transaction-related costs, such as commissions, when it buys and sells securities (or "turns over" its portfolio). A higher turnover rate may indicate higher transaction costs. These costs, which are not reflected in annual fund operating expenses or the above example, affect fund performance. The fund's turnover rate in the most recent fiscal year was 28%.

Investments, risks, and performance

Investments

We invest mainly in bonds that are obligations of U.S. companies, are below-investment-grade in quality (sometimes referred to as "junk bonds"), and have intermediate- to long-term maturities (three years or longer). Under normal circumstances, we invest at least 80% of the fund's net assets in securities rated

below-investment-grade. This policy may be changed only after 60 days' notice to shareholders. We may also invest in other debt instruments, including loans.

We may consider, among other factors, credit, interest rate and prepayment risks, as well as general market conditions, when deciding whether to buy or sell investments. We may also use derivatives, such as futures, options, certain foreign currency transactions, and credit default swap contracts for both hedging and non-hedging purposes.

Risks

It is important to understand that you can lose money by investing in the fund.

The value of investments in the fund's portfolio may fall or fail to rise over extended periods of time for a variety of reasons, including general economic, political or financial market conditions, investor sentiment and market perceptions, government actions, geopolitical events or changes, outbreaks of infectious illnesses or other widespread public health issues, and factors related to a specific issuer, geography, industry, or sector. These and other factors may lead to increased volatility and reduced liquidity in the fund's portfolio holdings, may negatively impact the fund's performance, and may exacerbate other risks to which the fund is subject.

The risks associated with bond investments include interest rate risk, which is the risk that the value of the fund's investments is likely to fall if interest rates rise. Bond investments are also subject to credit risk, which is the risk that the issuer of a bond may default on payment of interest or principal. Bond investments may be more susceptible to downgrades or defaults during economic downturns or other periods of economic stress. Interest rate risk is generally greater for longer-term bonds, and credit risk is generally greater for below-investment-grade bonds (a significant part of the fund's investments), which can be more sensitive to changes in markets, credit conditions, and interest rates, and may be considered speculative.

Our use of derivatives may increase the risks of investing in the fund by increasing investment exposure (which may be considered leverage) or, in the case of many over-the-counter instruments, because of the potential inability to terminate or sell derivative positions and the potential failure of the other party to the instrument to meet its obligations. The risk of a party failing to meet its obligations may increase if the fund has significant investment exposure to that counterparty. The value of derivatives may move in unexpected ways due to unanticipated market movements, the use of leverage, imperfect correlation between the derivative instrument and the reference asset, or other factors, especially in unusual market conditions, and volatility in the value of derivatives could adversely impact the fund's returns, obligations and exposures. Derivatives are also subject to other risks, including liquidity risk (e.g., liquidity demands arising from the requirement to make payments to a derivative counterparty),

operational risk (e.g., settlement issues or system failures), and legal risk (e.g., insufficient legal documentation or contract enforceability issues).

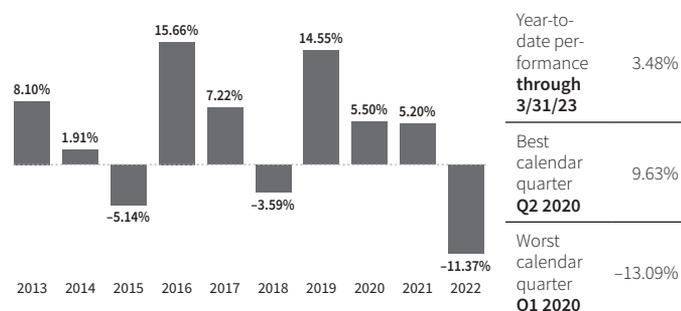
There is no guarantee that the investment techniques, analyses, or judgments that we apply in making investment decisions for the fund will produce the intended outcome or that the investments we select for the fund will perform as well as other securities that were not selected for the fund. We, or the fund's other service providers, may experience disruptions or operating errors that could negatively impact the fund.

The fund may not achieve its goal, and it is not intended to be a complete investment program. An investment in the fund is not insured or guaranteed by the Federal Deposit Insurance Corporation or any other government agency.

Performance

The performance information below gives some indication of the risks associated with an investment in the fund by showing the fund's performance year to year and over time. The performance information does not reflect insurance-related charges or expenses. If it did, performance would be lower. Please remember that past performance is not necessarily an indication of future results.

Annual total returns for class IA shares



Average annual total returns

(for periods ended 12/31/22)

Share class	1 year	5 years	10 years
Class IA	-11.37%	1.67%	3.48%
Class IB	-11.60%	1.39%	3.22%
JPMorgan Developed High Yield Index (no deduction for fees, expenses or taxes)	-10.47%	2.25%	4.18%

Your fund's management

Investment advisor

Putnam Investment Management, LLC

Portfolio managers

Robert Salvin, Head of Corporate and Tax-exempt Credit, portfolio manager of the fund since 2005

Norman Boucher, Portfolio Manager, portfolio manager of the fund since 2005

Sub-advisor

Putnam Investments Limited*

* Though the investment advisor has retained the services of Putnam Investments Limited (PIL), PIL does not currently manage any assets of the fund.

Purchase and sale of fund shares

Fund shares are offered to separate accounts of various insurers. The fund requires no minimum investment, but insurers may require minimum investments from those purchasing variable insurance products for which the fund is an underlying investment option. Insurers may purchase or sell shares on behalf of separate accounts by submitting an order to Putnam Retail Management any day the New York Stock Exchange (NYSE) is open. Some restrictions may apply.

Tax information

Generally, owners of variable insurance contracts are not taxed currently on income or gains realized with respect to such contracts. However, some distributions from such contracts may be taxable at ordinary income tax rates and distributions to contract owners younger than 59½ may be subject to a 10% penalty tax. For more information, please see the prospectus (or other offering document) for your variable insurance contract.

Payments to insurance companies

The fund is offered as an underlying investment option for variable insurance contracts. The fund and its related companies may make payments to the sponsoring insurance company (or its affiliates) and dealers for distribution and/or other services. These payments may create an incentive for the insurance company to include the fund, rather than another investment, as an option in its products and may create a conflict of interest for dealers in recommending the fund over another investment. The prospectus (or other offering document) for your variable insurance contract may contain additional information about these payments.

What are the fund's main investment strategies and related risks?

This section contains greater detail on the fund's main investment strategies and the related risks you would face as a fund shareholder. It is important to keep in mind that risk and reward generally go hand in hand; the higher the potential reward, the greater the risk. As mentioned in the fund summary, we pursue the fund's goal by investing mainly in lower-rated bonds and other debt instruments, including loans.

- **Interest rate risk.** The values of bonds and other debt instruments usually rise and fall in response to changes in interest rates. Interest rates can change in response to the supply and demand

for credit, government and/or central bank monetary policy and action, inflation rates, and other factors. Declining interest rates generally result in an increase in the value of existing debt instruments, and rising interest rates generally result in a decrease in the value of existing debt instruments. Changes in a debt instrument's value usually will not affect the amount of interest income paid to the fund, but will affect the value of the fund's shares. Interest rate risk is generally greater for investments with longer maturities.

Some investments give the issuer the option to call or redeem an investment before its maturity date. If an issuer calls or redeems an investment during a time of declining interest rates, we might have to reinvest the proceeds in an investment offering a lower yield, and, therefore, the fund might not benefit from any increase in value as a result of declining interest rates.

- **Credit risk.** Investors normally expect to be compensated in proportion to the risk they are assuming. Thus, debt of issuers with poor credit prospects usually offers higher yields than debt of issuers with more secure credit. Higher-rated investments generally have lower credit risk.

We invest mostly in higher-yield, higher-risk debt investments that are rated below BBB or its equivalent at the time of purchase by any nationally recognized securities rating agency rating such investments, or in unrated investments that we believe are of comparable quality. We may invest up to 15% of the fund's total assets in debt investments rated below CCC or its equivalent, at the time of purchase, by each rating agency rating such investments, or in unrated investments that we believe are of comparable quality. This includes investments in the lowest rating category of the rating agency. We will not necessarily sell an investment if its rating is reduced after we buy it.

Investments rated below BBB or its equivalent are below-investment-grade in quality (sometimes referred to as "junk bonds"). This rating reflects a greater possibility that the issuers may be unable to make timely payments of interest and principal and thus default. If a default occurs, or is perceived as likely to occur, the value of the investment will usually be more volatile and is likely to fall. The value of a debt instrument may also be affected by changes in, or perceptions of, the financial condition of the issuer, borrower, counterparty, or other entity, or underlying collateral or assets, or changes in, or perceptions of, specific or general market, economic, industry, political, regulatory, geopolitical, environmental, public health, and other conditions. A default or expected default could also make it difficult for us to sell the investment at a price approximating the value we had previously placed on it. Lower-rated debt usually has a more limited market than higher-rated debt, which may at times make it difficult for us to buy or sell certain debt instruments or to establish their fair values. Credit risk is generally greater for zero-coupon bonds and other investments that are issued at less than their face value and that are required to make interest

payments only at maturity rather than at intervals during the life of the investment.

Credit ratings are based largely on the issuer's historical financial condition and the rating agencies' investment analysis at the time of rating. The rating assigned to any particular investment does not necessarily reflect the issuer's current financial condition, and does not reflect an assessment of the investment's volatility or liquidity. Although we consider credit ratings in making investment decisions, we perform our own investment analysis and do not rely only on ratings assigned by the rating agencies. Our success in achieving the fund's goal may depend more on our own credit analysis when we buy lower-rated debt than when we buy investment-grade debt. We may have to participate in legal proceedings involving the issuer. This could increase the fund's operating expenses and decrease its net asset value.

Although investment-grade investments generally have lower credit risk, they may share some of the risks of lower-rated investments.

Bond investments may be more susceptible to downgrades or defaults during economic downturns or other periods of economic stress, which can significantly strain the financial resources of debt issuers, including the issuers of the bonds in which the fund invests (or has exposure to). This may make it less likely that those issuers can meet their financial obligations when due and may adversely impact the value of their bonds, which could negatively impact the performance of the fund. It is difficult to predict the level of financial stress and duration of such stress issuers may experience.

- **Derivatives.** We may engage in a variety of transactions involving derivatives, such as futures, options, certain foreign currency transactions, and credit default swap contracts.

Derivatives are financial instruments whose value depends upon, or is derived from, the value of something else, such as one or more underlying investments, pools of investments, indexes or currencies. We may make use of "short" derivative positions, the values of which typically move in the opposite direction from the price of the underlying investment, pool of investments, index or currency. We may use derivatives both for hedging and non-hedging purposes. For example, we may use derivatives to increase or decrease the fund's exposure to long- or short-term interest rates (in the United States or abroad) or as a substitute for a direct investment in the securities of one or more issuers. However, we may also choose not to use derivatives based on our evaluation of market conditions or the availability of suitable derivatives. Investments in derivatives may be applied toward meeting a requirement to invest in a particular kind of investment if the derivatives have economic characteristics similar to that investment.

Derivatives involve special risks and may result in losses. The successful use of derivatives depends on our ability to manage these sophisticated instruments. Some derivatives

are “leveraged,” which means they provide the fund with investment exposure greater than the value of the fund’s investment in the derivatives. As a result, these derivatives may magnify or otherwise increase investment losses to the fund. The risk of loss from certain short derivative positions is theoretically unlimited. The value of derivatives may move in unexpected ways due to unanticipated market movements, the use of leverage, imperfect correlation between the derivative instrument and the reference asset, or other factors, especially in unusual market conditions, and volatility in the value of derivatives could adversely impact the fund’s returns, obligations and exposures.

Other risks arise from the potential inability to terminate or sell derivative positions. Derivatives may be subject to liquidity risk due to the fund’s obligation to make payments of margin, collateral, or settlement payments to counterparties. A liquid secondary market may not always exist for the fund’s derivative positions. In fact, certain over-the-counter instruments (investments not traded on an exchange) may not be liquid. Over-the-counter instruments also involve the risk that the other party to the derivative transaction may not be willing or able to meet its obligations with respect to the derivative transaction. The risk of a party failing to meet its obligations may increase if the fund has significant exposure to that counterparty. Derivative transactions may also be subject to operational risk, including due to documentation and settlement issues, system failures, inadequate controls and human error, and legal risk due to insufficient documentation, insufficient capacity or authority of a counterparty, or issues with respect to the legality or enforceability of the derivative contract. For further information about additional types and risks of derivatives, see *Miscellaneous Investments, Investment Practices and Risks* in the Statement of Additional Information (SAI).

- **Floating rate loans.** Floating rate loans are debt obligations with interest rates that adjust or “float” periodically (normally on a monthly or quarterly basis) based on a generally recognized base rate, such as the London Inter-Bank Offered Rate or the prime rate offered by one or more major U.S. banks. While most floating rate loans are below-investment-grade in quality, many also are senior in rank in the event of bankruptcy to most other securities of the borrower, such as common stock or public bonds. Floating rate loans are also normally secured by specific collateral or assets of the borrower so that the holders of the loans will have a priority claim on those assets in the event of default or bankruptcy of the issuer.

Floating rate loans generally are less sensitive to interest rate changes than obligations with fixed interest rates but may decline in value if their interest rates do not rise as much, or as quickly, as interest rates in general. Conversely, floating rate instruments will not generally increase in value if interest rates decline. Changes in interest rates will also affect the amount of interest income the fund earns on its floating rate investments. Most floating rate loans allow for prepayment of principal without penalty. If a borrower prepays a loan, we might have to reinvest the proceeds

in an investment that may have lower yields than the yield on the prepaid loan or might not be able to take advantage of potential gains from increases in the credit quality of the issuer.

The value of collateral, if any, securing a floating rate loan can decline, and may be insufficient to meet the borrower’s obligations or difficult to liquidate. In addition, the fund’s access to collateral may be limited by bankruptcy or other insolvency proceedings. Floating rate loans may not be fully collateralized and may decline in value. Loans may not be considered “securities,” and it is possible that the fund may not be entitled to rely on anti-fraud and other protections under the federal securities laws when it purchases loans.

Although the market for the types of floating rate loans in which the fund invests has become increasingly liquid over time, this market is still developing, and there can be no assurance that adverse developments with respect to this market or particular borrowers will not prevent the fund from selling these loans at their market values when we consider such a sale desirable. In addition, the settlement period (the period between the execution of the trade and the delivery of cash to the purchaser) for floating rate loan transactions may be significantly longer than the settlement period for other investments, and in some cases longer than seven days. Requirements to obtain consent of borrower and/or agent can delay or impede the fund’s ability to sell the floating rate loans and can adversely affect the price that can be obtained. It is possible that sale proceeds from floating rate loan transactions will not be available to meet redemption obligations.

- **Foreign investments.** We may invest in foreign investments, although foreign investments do not represent a primary focus of the fund. Foreign investments involve certain special risks. For example, their values may decline in response to changes in currency exchange rates, unfavorable political and legal developments, unreliable or untimely information, and economic and financial instability. In addition, the liquidity of these investments may be more limited than for most U.S. investments, which means we may at times be unable to sell them at desirable prices. Foreign settlement procedures may also involve additional risks. These risks are generally greater in the case of developing (also known as emerging) markets, which typically have less developed legal and financial systems.

Certain of these risks may also apply to some extent to U.S.-traded investments that are denominated in foreign currencies, investments in U.S. companies that are traded in foreign markets, or investments in U.S. companies that have significant foreign operations.

- **Liquidity and illiquid investments.** We may invest up to 15% of the fund’s net assets in illiquid investments, which may be considered speculative and which may be difficult to sell. The sale of many of these investments is prohibited or limited by law or contract. Some investments may be difficult to value for purposes of determining the fund’s net asset value. Certain

other investments may not have an active trading market due to adverse market, economic, industry, political, regulatory, geopolitical, environmental, public health, and other conditions, including investors trying to sell large quantities of a particular investment or type of investment, or lack of market makers or other buyers for a particular investment or type of investment. We may not be able to sell the fund's illiquid investments when we consider it desirable to do so, or we may be able to sell them only at less than their value.

- **Market risk.** The value of investments in the fund's portfolio may fall or fail to rise over extended periods of time for a variety of reasons, including general economic, political or financial market conditions; investor sentiment and market perceptions (including perceptions about monetary policy, interest rates, inflation or the risk of default); government actions (including protectionist measures, intervention in the financial markets or other regulation, and changes in fiscal, monetary or tax policies); geopolitical events or changes (including natural disasters, terrorism and war); outbreaks of infectious illnesses or other widespread public health issues (including epidemics and pandemics); and factors related to a specific issuer, asset class, geography. Foreign financial markets have their own market risks, and they may be more or less volatile than U.S. markets and may move in different directions. During a general downturn in financial markets, multiple asset classes may decline in value simultaneously. These and other factors may lead to increased volatility and reduced liquidity in the fund's portfolio holdings. During those periods, the fund may experience high levels of shareholder redemptions, and may have to sell securities at times when it would otherwise not do so, and at unfavorable prices. These risks may be exacerbated during economic downturns or other periods of economic stress.

The COVID-19 pandemic and efforts to contain its spread have resulted in, among other effects, significant market volatility, exchange trading suspensions and closures, declines in global financial markets, higher default rates, significant changes in fiscal and monetary policies, and economic downturns and recessions. The effects of the COVID-19 pandemic have negatively affected, and may continue to negatively affect, the global economy, the economies of the United States and other individual countries, the financial performance of individual issuers, sectors, industries, asset classes, and markets, and the value, volatility, and liquidity of particular securities and other assets. The effects of the COVID-19 pandemic also are likely to exacerbate other risks that apply to the fund, including the risks disclosed in this prospectus, which could negatively impact the fund's performance and lead to losses on your investment in the fund. The duration of the COVID-19 pandemic and its effects cannot be determined with certainty.

- **ESG considerations.** Although ESG considerations do not represent a primary focus of the fund, we expect to integrate environmental, social, or governance ("ESG") considerations into our fundamental research process and investment deci-

sion-making for the fund, where we consider them material and relevant, and where data is available. We believe that ESG considerations, like other, more traditional subjects of investment analysis such as credit, interest rate and liquidity risks, as well as general market conditions, have the potential to impact financial risk and investment returns. We believe that ESG considerations are best analyzed in combination with a company's fundamentals, including a company's industry, geography, and strategic position. We evaluate ESG considerations using independent third-party data (where available), and we also use company or issuer disclosures and public data sources. Because fixed-income investments generally represent a promise to pay principal and interest by an issuer, and not an ownership interest, and may involve complex structures, ESG-related investment considerations may have a more limited impact on risk and return (or may have an impact over a different investment time horizon) relative to other asset classes, and this may be particularly true for shorter-term investments. The consideration of ESG factors as part of the fund's investment process does not mean that the fund pursues a specific "ESG" or "sustainable" investment strategy, and we may make investment decisions for the fund other than on the basis of relevant ESG considerations.

- **Management and operational risk.** The fund is actively managed and its performance will reflect, in part, our ability to make investment decisions that seek to achieve the fund's investment objective. There is no guarantee that the investment techniques, analyses, or judgments that we apply in making investment decisions for the fund will produce the intended outcome or that the investments we select for the fund will perform as well as other securities that were not selected for the fund. As a result, the fund may underperform its benchmark or other funds with a similar investment goal and may realize losses. In addition, we, or the fund's other service providers, may experience disruptions or operating errors that could negatively impact the fund. Although service providers may have operational risk management policies and procedures and take appropriate precautions to avoid and mitigate risks that could lead to disruptions and operating errors, it may not be possible to identify all of the operational risks that may affect the fund or to develop processes and controls to completely eliminate or mitigate their occurrence or effects.

- **Other investments.** In addition to the main investment strategies described above, the fund may make other types of investments, such as investments in equity securities, asset-backed, hybrid and structured bonds and notes, preferred securities that would be characterized as debt securities under applicable accounting standards and tax laws, and assignments of and participations in fixed and floating rate loans.

The fund may also invest in cash or cash equivalents, including money market instruments or short-term instruments such as commercial paper, bank obligations (e.g., certificates of deposit and bankers' acceptances), repurchase agreements, and U.S. Treasury bills or other government obligations. The fund may

also from time to time invest all or a portion of its cash balances in money market and/or short-term bond funds advised by Putnam Management or its affiliates. The percentage of the fund invested in cash and cash equivalents and such money market and short-term bond funds is expected to vary over time and will depend on various factors, including market conditions, purchase and redemption activity by fund shareholders, and our assessment of the cash level that is appropriate to allow the fund to pursue investment opportunities as they arise and to meet shareholder redemption requests. Large cash positions may dampen performance and may prevent the fund from achieving its goal. The fund may also loan portfolio securities to earn income. These practices may be subject to other risks, as described under *Miscellaneous Investments, Investment Practices and Risks* in the SAI.

- **Temporary defensive strategies.** In response to adverse market, economic, political or other conditions, we may take temporary defensive positions, such as investing some or all of the fund's assets in cash and cash equivalents, that differ from the fund's usual investment strategies. However, we may choose not to use these temporary defensive strategies for a variety of reasons, even in very volatile market conditions. If we do employ these strategies, the fund may miss out on investment opportunities, and may not achieve its goal. Additionally, while temporary defensive strategies are mainly designed to limit losses, they may not work as intended.
- **Changes in policies.** The Trustees may change the fund's goal, investment strategies and other policies set forth in this prospectus without shareholder approval, except as otherwise provided in the prospectus or SAI.
- **Portfolio turnover rate.** The fund's portfolio turnover rate measures how frequently the fund buys and sells investments. A portfolio turnover rate of 100%, for example, would mean that the fund sold and replaced securities valued at 100% of the fund's assets within a one-year period. From time to time the fund may engage in frequent trading. High turnover may also cause a fund to pay more brokerage commissions and to incur other transaction costs (including imputed transaction costs), which may detract from performance. The fund's portfolio turnover rate and the amount of brokerage commissions it pays and transaction costs it incurs will vary over time based on market conditions.
- **Portfolio holdings.** The SAI includes a description of the fund's policies with respect to the disclosure of its portfolio holdings. For more specific information on the fund's portfolio, you may visit the Putnam Investments website, putnam.com/individual/annuities, where the fund's top 10 holdings and related portfolio information may be viewed monthly beginning approximately 15 days after the end of each month, and full portfolio holdings may be viewed monthly beginning on the 8th business day after the end of each month. This information will remain available on the website at least until the fund files a Form N-CSR or publicly available Form N-PORT with the SEC for the period that includes

the date of the information, after which such information can be found on the SEC's website at <http://www.sec.gov>.

Who oversees and manages the fund?

The fund's Trustees

As a shareholder of a mutual fund, you have certain rights and protections, including representation by a Board of Trustees. The Putnam Funds' Board of Trustees oversees the general conduct of the fund's business and represents the interests of the Putnam fund shareholders. At least 75% of the members of the Putnam Funds' Board of Trustees are independent, which means they are not officers of the fund or affiliated with Putnam Investment Management, LLC (Putnam Management).

The Trustees periodically review the fund's investment performance and the quality of other services such as administration, custody, and investor services. At least annually, the Trustees review the fees paid to Putnam Management and its affiliates for providing or overseeing these services, as well as the overall level of the fund's operating expenses. In carrying out their responsibilities, the Trustees are assisted by an administrative staff, auditors and legal counsel that are selected by the Trustees and are independent of Putnam Management and its affiliates.

Contacting the fund's Trustees

Address correspondence to:
The Putnam Funds Trustees
100 Federal Street
Boston, MA 02110

The fund's investment manager

The Trustees have retained Putnam Management, which has managed mutual funds since 1937, to be the fund's investment manager, responsible for making investment decisions for the fund and managing the fund's other affairs and business.

The basis for the Trustees' approval of the fund's management contract and the sub-management contract described below is discussed in the fund's semiannual report to shareholders dated June 30, 2022.

The fund pays a monthly management fee to Putnam Management. The fee is calculated by applying a rate to the fund's average net assets for the month. The rate is based on the monthly average of the aggregate net assets of other open-end funds sponsored by Putnam Management (excluding net assets of such funds that are invested in, or that are invested in by, other such funds to the extent necessary to avoid "double counting" of those assets), and generally declines as the aggregate net assets increase.

The fund paid Putnam Management a management fee (after any applicable waivers) of 0.56% of average net assets for the fund's last fiscal year.

Putnam Management’s address is 100 Federal Street, Boston, MA 02110.

Putnam Management has retained its affiliate PIL to make investment decisions for such fund assets as may be designated from time to time for its management by Putnam Management. PIL is not currently managing any fund assets. If PIL were to manage any fund assets, Putnam Management (and not the fund) would pay a quarterly sub-management fee to PIL for its services at the annual rate of 0.20% of the average net asset value (NAV) of any fund assets managed by PIL. PIL, which provides a full range of international investment advisory services to institutional clients, is located at 16 St James’s Street, London, England, SW1A 1ER.

Pursuant to this arrangement, Putnam investment professionals who are based in foreign jurisdictions may serve as portfolio managers of the fund or provide other investment services, consistent with local regulations.

- **Portfolio managers.** The officers of Putnam Management identified below are jointly and primarily responsible for the day-to-day management of the fund’s portfolio.

Portfolio managers	Joined fund	Employer	Positions over past five years
Robert Salvin	2005	Putnam Management 2000 – Present	Head of Corporate and Tax-exempt Credit Previously, Co-Head of Corporate and Tax exempt Credit and Portfolio Manager
Norman Boucher	2005	Putnam Management 1998 – Present	Portfolio Manager

The SAI provides information about these individuals’ compensation, other accounts managed by these individuals and these individuals’ ownership of securities in the fund.

How to buy and sell fund shares

The Trust has an underwriting agreement relating to the fund with Putnam Retail Management, 100 Federal Street, Boston, Massachusetts 02110. Putnam Retail Management presently offers shares of the fund continuously to separate accounts of various insurers. The underwriting agreement presently provides that Putnam Retail Management accepts orders for shares at NAV and no sales commission or load is charged.

Shares are sold or redeemed at the NAV per share next determined after receipt of an order. Orders for purchases or sales of shares of the fund must be received by Putnam Retail Management before the close of regular trading on the NYSE in order to receive that day’s NAV. No fee is charged to a separate account when it redeems fund shares.

Please check with your insurance company to determine whether the fund is available under your variable annuity contract or variable life insurance policy. The fund may not be available in your state due to various insurance regulations. This prospectus should be read in conjunction with the prospectus of the separate account of the specific insurance product which accompanies this prospectus.

The fund currently does not foresee any disadvantages to policy owners arising out of the fact that the fund offers its shares to separate accounts of various insurance companies to serve as the investment medium for their variable products. Nevertheless, the Trustees intend to monitor events in order to identify any material irreconcilable conflicts which may possibly arise, and to determine what action, if any, should be taken in response to such conflicts. If such a conflict were to occur, one or more insurance companies’ separate accounts might be required to withdraw their investments in the fund and shares of another fund may be substituted. This might force the fund to sell portfolio securities at disadvantageous prices. In addition, the Trustees may refuse to sell shares of the fund to any separate account or may suspend or terminate the offering of shares of the fund if such action is required by law or regulatory authority or is in the best interests of the shareholders of the fund.

The fund typically expects to send you payment for your shares one business day after your request is received in good order. However, it is possible that payment of redemption proceeds may take up to seven days. Under unusual circumstances, the Trust may suspend redemptions or postpone payment for more than seven days, as permitted by federal securities law. Under normal market conditions, the fund typically expects to satisfy redemption requests by using holdings of cash and cash equivalents or selling portfolio assets to generate cash. Under stressed market conditions, the fund may also satisfy redemption requests by borrowing under the fund’s lines of credit or interfund lending arrangements. For additional information regarding the fund’s lines of credit and interfund lending arrangements, please see the SAI.

To the extent consistent with applicable laws and regulations, the fund reserves the right to satisfy all or a portion of a redemption request by distributing securities or other property in lieu of cash (“in-kind” redemptions), under both normal and stressed market conditions. The fund generally expects to use in-kind redemptions only in stressed market conditions or stressed conditions specific to the fund, such as redemption requests that represent a large percentage of the fund’s net assets in order to minimize the effect of the large redemption on the fund and its remaining shareholders. Any in-kind redemption will be effected through a pro rata distribution of all publicly traded portfolio securities or securities for which quoted bid prices are available, subject to certain exceptions. The securities distributed in an in-kind redemption will be valued in the same manner as they

are valued for purposes of computing the fund's net asset value. Once distributed in-kind to an investor, securities may increase or decrease in value before the investor is able to convert them into cash. Any transaction costs or other expenses involved in liquidating securities received in an in-kind redemption will be borne by the redeeming investor. The fund has committed, in connection with an election under Rule 18f-1 under the Investment Company Act of 1940, to pay all redemptions of fund shares by a single shareholder during any 90-day period in cash, up to the lesser of (i) \$250,000 or (ii) 1% of the fund's net assets measured as of the beginning of such 90-day period. For information regarding procedures for in-kind redemptions, please contact Putnam Retail Management.

How does the fund price its shares?

The price of the fund's shares is based on its NAV. The NAV per share of each class equals the total value of its assets, less its liabilities, divided by the number of its outstanding shares. Shares are only valued as of the scheduled close of regular trading on the NYSE each day the exchange is open.

The fund values its investments for which market quotations are readily available at market value. It values all other investments and assets at their fair value, which may differ from recent market prices. Market quotations are not considered to be readily available for many debt securities. These securities are generally valued at fair value on the basis of valuations provided by an independent pricing service approved by the fund's Trustees or dealers selected by Putnam Management. Pricing services and dealers determine valuations for normal institutional-size trading units of such securities using information with respect to transactions in the bond being valued, market transactions for comparable securities and various relationships, generally recognized by institutional traders, between securities. To the extent a pricing service or dealer is unable to value a security or provides a valuation that Putnam Management does not believe accurately reflects the security's fair value, the security will be valued at fair value by Putnam Management.

The fund translates prices for its investments quoted in foreign currencies into U.S. dollars at current exchange rates, which are generally determined as of 4:00 p.m. Eastern Time each day the NYSE is open. As a result, changes in the value of those currencies in relation to the U.S. dollar may affect the fund's NAV. Because foreign markets may be open at different times than the NYSE, the value of the fund's shares may change on days when shareholders are not able to buy or sell them. If events materially affecting the values of the fund's foreign fixed-income investments occur between the close of foreign markets and the close of regular trading on the NYSE, these investments will also be valued at their fair value. As noted above, the value determined for an investment using the fund's fair value pricing procedures may differ from recent market prices for the investment.

Distribution plan and payments to dealers

The Trust has adopted a Distribution Plan with respect to class IB shares to compensate Putnam Retail Management for services provided and expenses incurred by it as principal underwriter of the class IB shares, including the payments to insurance companies and their affiliated dealers mentioned below. The plan provides for payments by the fund to Putnam Retail Management at the annual rate (expressed as a percentage of average net assets) of up to 0.35% on class IB shares. The Trustees currently limit payments on class IB shares to 0.25% of average net assets. Because these fees are paid out of the fund's assets on an ongoing basis, they will increase the cost of your investment.

Putnam Retail Management compensates insurance companies (or affiliated broker-dealers) whose separate accounts invest in the Trust through class IB shares for providing services to their contract holders investing in the Trust.

Putnam Retail Management makes quarterly payments to dealers at the annual rate of up to 0.25% of the average NAV of class IB shares.

Putnam Retail Management may suspend or modify its payments to dealers. The payments are also subject to the continuation of the Distribution Plan, the terms of service agreements between dealers and Putnam Retail Management, and any applicable limits imposed by the Financial Industry Regulatory Authority (FINRA).

In addition to the payments described above with respect to class IB shares, Putnam Retail Management and its affiliates also pay additional compensation to selected insurance companies (or affiliated broker-dealers) to whom shares of the fund are offered ("Record Owners") and to dealers that sell variable insurance products ("dealers") in recognition of their marketing and/or administrative services support. These payments may create an incentive for a Record Owner firm, dealer firm or their representatives to recommend or offer shares of the fund or other Putnam funds, or insurance products for which the fund serves as an underlying investment, to its customers. These additional payments are made by Putnam Retail Management and its affiliates and do not increase the amount paid by you or the fund as shown under *Fund summary — Fees and expenses*.

The additional payments to Record Owners and dealers by Putnam Retail Management and its affiliates are generally based on one or more of the following factors: average net assets of the fund attributable to that Record Owner or dealer, sales or net sales of the fund attributable to that Record Owner or dealer, or on the basis of a negotiated lump sum payment for services provided. Payments made by Putnam Retail Management and its affiliates for marketing and/or administrative support services to any one Record Owner or dealer are not expected, with certain limited exceptions, to exceed 0.25% of the average assets of the fund attributable to that Record Owner or dealer.

on an annual basis. These payments are made for marketing and/or administrative support services provided by Record Owners and dealers, including business planning assistance, educating dealer personnel about the fund and shareholder financial planning needs, placement on the dealer's preferred or recommended fund company list, access to sales meetings, sales representatives and management representatives of the dealer and administrative services performed by the Record Owner or dealer. Putnam Retail Management and its affiliates may make other payments (including payments in connection with educational seminars or conferences) or allow other promotional incentives to Record Owners and dealers to the extent permitted by SEC and National Association of Security Dealers, Inc. (as adopted by FINRA) rules and by other applicable laws and regulations.

You can find a list of all Record Owners and dealers to which Putnam made marketing and/or administrative support services payments in 2022 in the SAI, which is on file with the SEC and is also available on Putnam's website at putnam.com. You can also find other details in the SAI about the payments made by Putnam Retail Management and its affiliates and the services provided by your Record Owner or dealer. In addition, you can ask your Record Owner or dealer for information about any payments it receives from Putnam Retail Management and its affiliates and any services provided by your Record Owner or dealer.

Policy on excessive short-term trading

- **Risks of excessive short-term trading.** Excessive short-term trading activity may reduce the fund's performance and harm all fund shareholders by interfering with portfolio management, increasing the fund's expenses and diluting the fund's NAV. Depending on the size and frequency of short-term trades in the fund's shares, the fund may experience increased cash volatility, which could require the fund to maintain undesirably large cash positions or buy or sell portfolio securities it would not have bought or sold otherwise. The need to execute additional portfolio transactions due to these cash flows may also increase the fund's brokerage and administrative costs.

When the fund invests in foreign securities, its performance may be adversely impacted and the interests of longer-term shareholders may be diluted as a result of time-zone arbitrage, a short-term trading practice that seeks to exploit changes in the value of the fund's investments that result from events occurring after the close of the foreign markets on which the investments trade, but prior to the later close of trading on the NYSE, the time as of which the fund determines its NAV. If an arbitrageur is successful, he or she may dilute the interests of other shareholders by trading shares at prices that do not fully reflect their fair value.

Because the fund invests in securities that may trade infrequently or may be more difficult to value, such as lower-rated bonds, it may be susceptible to trading by short-term traders

who seek to exploit perceived price inefficiencies in the fund's investments. In addition, the market for lower-rated bonds may at times show "market momentum," in which positive or negative performance may continue from one day to the next for reasons unrelated to the fundamentals of the issuer. Short-term traders may seek to capture this momentum by trading frequently in the fund's shares, which will reduce the fund's performance and may dilute the interests of other shareholders. Because lower-rated debt may be less liquid than higher-rated debt, the fund may also be unable to buy or sell these securities at desirable prices when the need arises (for example, in response to volatile cash flows caused by short-term trading). Similar risks may apply if the fund holds other types of less liquid securities.

- **Fund policies and limitations.** In order to protect the interests of long-term shareholders of the fund, Putnam Management and the fund's Trustees have adopted policies and procedures intended to discourage excessive short-term trading. The fund seeks to discourage excessive short-term trading by using fair value pricing procedures to value investments under some circumstances. In addition, Putnam Management monitors aggregate cash flows in each insurance company separate account that invests in the fund. If high cash flows relative to the size of the account or other information indicate that excessive short-term trading may be taking place in a particular separate account, Putnam Management will contact the insurance company that maintains accounts for the underlying contract holders and seek to have the insurance company enforce the separate account's policies on excessive short-term trading. As noted below, each insurance company's policies on excessive short-term trading will vary, and some insurance companies may not have adopted specific policies on excessive short-term trading.

As noted above, the fund's shareholders are separate accounts sponsored by various insurance companies. Because Putnam Management currently does not have comprehensive access to trading records of individual contract holders, it is difficult (and in some cases impossible) for Putnam Management to determine if a particular contract holder is engaging in excessive short-term trading. In certain circumstances, there currently are also operational or technological constraints on Putnam Management's ability to monitor trading activity. In addition, even in circumstances when Putnam Management has access to sufficient information to permit a review of trading, its detection methods may not capture all excessive short-term trading.

As a result of these limitations, the fund's ability to monitor and deter excessive short-term trading ultimately depends on the capabilities, policies and cooperation of the insurance companies that sponsor the separate accounts. Some of the separate accounts have adopted transfer fees, limits on exchange activity, or other measures to attempt to address the potential for excessive short-term trading, while other separate accounts currently have not. For more information about any measures applicable

to your investment, please see the prospectus of the separate account of the specific insurance product that accompanies this prospectus. The measures used by Putnam Management or a separate account may or may not be effective in deterring excessive short-term trading. In addition, the terms of the particular insurance contract may also limit the ability of the insurance company to address excessive short-term trading. As a result, the fund can give no assurances that market timing and excessive short-term trading will not occur in the fund.

In compliance with Rule 22c-2 under the Investment Company Act of 1940, as amended, Putnam Retail Management and Putnam Investor Services, on behalf of the fund, have entered into written agreements with the fund's financial intermediaries, under which the intermediary must, upon request, provide the fund with certain shareholder identity and trading information so that the fund can enforce its market timing policies.

- **Account monitoring.** In instances where trading records of individual contract holders are made available to Putnam Management, Putnam Management measures excessive short-term trading in the fund by the number of "round trip" transactions within a specified period of time. A "round trip" transaction is defined as a transfer into a fund followed, or preceded, by a transfer out of the same fund. A transfer is defined as a transaction requested by the contract owner to reallocate part or all of their contract value among the funds available in the contract. If Putnam Management's Compliance Department determines that a contract holder has engaged in excessive short-term trading, Putnam Management will request that the separate account's financial intermediary issue a written warning to the contract holder. Putnam Management's practices for measuring excessive short-term trading activity and requesting warnings to be issued may change from time to time. Some types of transactions are exempt from monitoring, including, but not limited to, transfers that are executed automatically pursuant to a company-sponsored contractual or systematic program such as transfer of assets as a result of "dollar cost averaging" programs, asset allocation programs or automatic rebalancing programs. Also exempt are annuity payouts, loans, and systematic withdrawal programs; payment of a death benefit; any deduction of fees; payments such as loan repayments, scheduled contributions, withdrawals or surrenders; or retirement plan salary reduction contributions or planned premium payments.

- **Account restrictions.** In addition to these monitoring practices, Putnam Management and the fund reserve the right to reject or restrict transfers for any reason. Continued excessive short-term trading activity by a contract holder following a warning may lead to termination of the transfer privilege for that contract holder. Putnam Management may determine that a contract holder's trading activity is excessive or otherwise potentially harmful based on various factors, including trading history in the fund or other Putnam funds, and may aggregate activity in multiple accounts in the fund or other Putnam funds that Putnam

Management believes are under common ownership or control for purposes of determining whether the activity is excessive. If Putnam Management identifies a contract holder engaging in excessive trading, depending on the capabilities of the intermediary, it may revoke certain privileges. Putnam Management may also temporarily or permanently bar the contract holder or insurance company separate account from investing in the fund or other Putnam funds. Putnam Management may take these steps in its discretion even if the contract holder's activity does not fall within Putnam Management's current monitoring parameters for the fund.

Fund distributions and taxes

The fund normally distributes any net investment income and any net realized capital gains annually. Distributions will be reinvested in additional shares of the fund, unless an election is made on behalf of a separate account to receive some or all of the distributions in cash.

Distributions are reinvested without a sales charge, using the NAV determined on the ex-dividend date. Distributions on each share are determined in the same manner and are paid in the same amount, regardless of class, except for such differences as are attributable to different class expenses.

Generally, holders of variable annuity and variable life insurance contracts are not taxed currently on income or gains realized with respect to such contracts. However, some distributions from such contracts may be taxable at ordinary income tax rates. In addition, distributions made to a contract holder who is younger than 59½ may be subject to a 10% penalty tax. Investors should ask their own tax advisors for more information on their own tax situation, including possible foreign, state or local taxes.

In order for investors to receive the favorable tax treatment available to holders of variable annuity and variable life insurance contracts, the separate accounts underlying such contracts, as well as the funds in which such accounts invest, must meet certain diversification requirements. The fund intends to diversify its assets in accordance with these requirements. If the fund does not meet such requirements, income allocable to the contracts would be taxable currently to the holders of such contracts. In addition, if the Internal Revenue Service finds an impermissible level of "investor control" over the investment options underlying variable annuity or variable life insurance contracts, the advantageous tax treatment provided with respect to insurance company separate accounts under the Internal Revenue Code of 1986, as amended, will no longer be available. Please see the SAI for further discussion.

The fund intends to qualify as a "regulated investment company" for federal income tax purposes and to meet all other requirements necessary for it to be relieved of federal income taxes on income and gains it timely distributes to the separate accounts. For information concerning federal income tax consequences for

the holders of variable annuity contracts and variable life insurance policies, contract holders should consult the prospectus of the applicable separate account.

The fund's investments in certain debt obligations may cause the fund to recognize taxable income in excess of the cash generated by such obligations. Thus, the fund could be required at times to liquidate other investments, including when it is not advantageous to do so, in order to satisfy its distribution requirements.

The fund's investments in foreign securities, if any, may be subject to foreign withholding or other taxes. In that case, the fund's return on those investments would be decreased.

The fund's use of derivatives, if any, may affect the amount and timing of distributions to shareholders, potentially requiring the fund to liquidate other investments, including when it is not advantageous to do so, in order to satisfy its distribution requirements.

The foregoing discussion is very general and is based on the assumption that the shareholders in the fund will be insurance company separate accounts. For further information, please see *Taxes* in the SAI.

Information about the Summary Prospectus, Prospectus, and SAI

The summary prospectus, prospectus, and SAI for a fund provide information concerning the fund. The summary prospectus, prospectus, and SAI are updated at least annually and any information provided in a summary prospectus, prospectus, or SAI can be changed without a shareholder vote unless specifically stated otherwise. The summary prospectus, prospectus, and the SAI are not contracts between the fund and its shareholders and do not give rise to any contractual rights or obligations or any shareholder rights other than any rights conferred explicitly by federal or state securities laws that may not be waived.

Financial highlights

The financial highlights tables are intended to help you understand the fund's recent financial performance. Certain information reflects financial results for a single fund share. The total returns represent the rate that an investor would have earned or lost on an investment in the fund, assuming reinvestment of all dividends and distributions. Total returns and expense ratios do not reflect insurance related charges or expenses; if these charges and expenses were reflected, performance would be lower and expenses would be higher. This information has been derived from the fund's financial statements, which have been audited by PricewaterhouseCoopers LLP. The Independent Registered Public Accounting Firm's report and the fund's financial statements are included in the fund's annual report to shareholders, which is available upon request.

Financial highlights

(For a common share outstanding throughout the period)

Period ended	INVESTMENT OPERATIONS:				LESS DISTRIBUTIONS:				RATIOS AND SUPPLEMENTAL DATA:				
	Net asset value, beginning of period	Net investment income (loss) ^a	Net realized and unrealized gain (loss) on investments	Total from investment operations	From net investment income	From net realized gain on investments	Total distributions	Net asset value, end of period	Total return at net asset value (%) ^{b,c}	Net assets, end of period (in thousands)	Ratio of expenses to average net assets (%) ^{b,d}	Ratio of net investment income (loss) to average net assets (%)	Portfolio turnover (%)
Class IA													
12/31/22	\$6.30	.29	(.98)	(.69)	(.31)	(.01)	(.32)	\$5.29	(11.37)	\$94,436	.75 ^f	5.24	28
12/31/21	6.30	.28	.03	.31	(.31)	—	(.31)	6.30	5.20	119,199	.70	4.56	44
12/31/20	6.39	.30	(.03) ^e	.27	(.36)	—	(.36)	6.30	5.50	125,959	.72	4.98	48
12/31/19	5.94	.33	.51	.84	(.39)	—	(.39)	6.39	14.55	131,799	.73	5.29	37
12/31/18	6.55	.35	(.57)	(.22)	(.39)	—	(.39)	5.94	(3.59)	129,535	.72	5.58	31
Class IB													
12/31/22	\$6.23	.27	(.97)	(.70)	(.29)	(.01)	(.30)	\$5.23	(11.60)	\$37,446	1.00 ^f	4.98	28
12/31/21	6.23	.27	.03	.30	(.30)	—	(.30)	6.23	4.97	49,084	.95	4.32	44
12/31/20	6.32	.28	(.03) ^e	.25	(.34)	—	(.34)	6.23	5.21	53,426	.97	4.71	48
12/31/19	5.87	.31	.51	.82	(.37)	—	(.37)	6.32	14.40	54,261	.98	5.04	37
12/31/18	6.49	.33	(.58)	(.25)	(.37)	—	(.37)	5.87	(4.07)	45,971	.97	5.33	31

^a Per share net investment income (loss) has been determined on the basis of the weighted average number of shares outstanding during the period.

^b The charges and expenses at the insurance company separate account level are not reflected.

^c Total return assumes dividend reinvestment.

^d Includes amounts paid through expense offset and/or brokerage/service arrangements, if any. Also excludes acquired fund fees and expenses, if any.

^e The Net realized and unrealized gain (loss) on investments shown for the period noted may not correspond with the amounts shown on the Statement of changes in net assets as a result of timing of share activity.

^f Includes one-time proxy cost of 0.01%.

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For more information about Putnam VT High Yield Fund

The fund's SAI and annual and semiannual reports to shareholders include additional information about the fund. The SAI, and the auditor's report and the financial statements included in the fund's most recent annual report to shareholders, are incorporated by reference into this prospectus, which means they are part of this prospectus for legal purposes. The fund's annual report discusses the market conditions and investment strategies that significantly affected the fund's performance during its last fiscal year. You may get free copies of these materials, request other information about any Putnam fund, or make shareholder inquiries, by contacting your financial representative, by visiting Putnam's website at putnam.com/individual/annuities, or by calling Putnam toll-free at 1-800-225-1581.

You may access reports and other information about the fund on the EDGAR Database on the Securities and Exchange Commission's website at <http://www.sec.gov>. You may get copies of this information, with payment of a duplication fee, by electronic request at the following E-mail address: publicinfo@sec.gov. You may need to refer to the fund's file number.

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