WELCOME!

Investment 101

3:00 – 4:00 PM

MONEY SMART DAY 2022

Hosted By: Student Support and Advocacy Center
Financial Well-Being Team

Presented By: William H. Bunn, CFA.,
Thomas L. Finn, CFA., William T. Sena, Jr. CFA, CFP

GEORGE MASON UNIVERSITY
SAVING

Benefit of saving and investing early

Account growth of $200 invested/saved monthly

- Consistent Chloe invests from ages 25 to 65 earning 6.25% ($24,000 total)
- Late Lily invests from ages 35 to 65 earning 6.25% ($24,000 total)
- JPMorgan Chase invests from ages 55 to 65 earning 6.25% ($20,000 total)

Ending portfolio
- $420,300 (77%)
- $210,700 (44%)
- $209,600 (89%)
- $147,900 (85%)

Investment return
Savings

The above example is for illustrative purposes only and not indicative of any investment. Source: JPMorgan Asset Management. Long-Term Capital Market Assumptions. Compounding is the increasing value of assets due to investment return earned on both principal and prior investment gains.

JPMorgan
ASSET MANAGEMENT
INVESTING PRINCIPLES: THE POWER OF COMPOUNDING
DEFINED CONTRIBUTION

Prioritizing long-term retirement savings

1. Emergency reserve (3 – 6 months of living expenses)
2. HSA (Health Savings Account) if eligible for match
3. Defined Contribution savings to maximize employer match (if available)
4. Pay down higher interest loans (such as credit card debt / student loans with interest > 6.25%)2
5. Additional HSA (Health Savings Account)3
6. Additional Defined Contribution savings
7. Pay down lower interest loans (such as student loans with interest < 6.25%)2
8. IRA
9. Taxable account

Getting started
Start with emergency savings and make sure to take advantage of employer matching funds if they are available.

An HSA offers triple tax benefits if used for qualified medical expenses in retirement. Prioritize contributions to an HSA before a Defined Contribution plan if current medical expenses can be funded from low-cost sources.4

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1Must have a high-deductible health insurance plan that is eligible to be paired with an HSA. Those taking Social Security benefits age 65 or older and those who are on Medicare are ineligible. Tax penalties apply for non-qualified distributions prior to age 65, consult IRS Publication 501 for your tax professional.
2This assumes that a diversified portfolio may earn 6.25% over the long term. Actual returns may be higher or lower. Generally, consider paying down a higher interest rate than your long-term expected investment return.
3Incentive limits may apply for IRAs. If ineligible for these, consider a non-deductible IRA or an after-tax 401(k) contribution. Individual situations will vary, consult your tax professional.
4Examples of low-cost funding sources include cash and current income.

Source: J.P. Morgan Asset Management analysis. Not intended to be a personal financial plan.
ECONOMY: INFLATION

CPI and core CPI
% change vs. prior year, seasonally adjusted

<table>
<thead>
<tr>
<th></th>
<th>50-yr. avg</th>
<th>Jan. 2022</th>
<th>Feb. 2022</th>
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<tr>
<td>Headline CPI</td>
<td>3.9%</td>
<td>7.5%</td>
<td>7.9%</td>
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<tr>
<td>Core CPI</td>
<td>3.8%</td>
<td>6.0%</td>
<td>6.4%</td>
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<tr>
<td>Food CPI</td>
<td>4.0%</td>
<td>7.0%</td>
<td>7.9%</td>
</tr>
<tr>
<td>Energy CPI</td>
<td>4.8%</td>
<td>27.0%</td>
<td>25.7%</td>
</tr>
<tr>
<td>Headline PCE deflator</td>
<td>3.4%</td>
<td>6.0%</td>
<td>6.4%</td>
</tr>
<tr>
<td>Core PCE deflator</td>
<td>3.3%</td>
<td>5.2%</td>
<td>5.4%</td>
</tr>
</tbody>
</table>

Source: BLS, FactSet, J.P. Morgan Asset Management.
CPI used is CPI-U and values shown are % change vs. one year ago. Core CPI is defined as CPI excluding food and energy prices. The Personal Consumption Expenditure (PCE) deflator employs an evolving chain-weighted basket of consumer expenditures instead of the fixed-weight basket used in CPI calculations.
Guide to the Markets – U.S. Data are as of March 31, 2022.
FIXED INCOME: INTEREST RATES AND INFLATION

Nominal and real U.S. 10-year Treasury yields

Sep. 30, 1981: 15.84%
Mar. 31, 2022: -4.09%
Mar. 31, 2022: 2.32%

Average (1958 - YTD 2022) Mar. 31, 2022
Nominal yields: 5.81% 2.32%
Real yields: 2.17% -4.09%
Inflation: 3.64% 6.42%

Nominal 10-year U.S. Treasury yield
Real 10-year U.S. Treasury yield

Real 10-year Treasury yields are calculated as the daily Treasury yield less year-over-year core CPI inflation for that month. For the current month, we use the prior month’s core CPI figures until the latest data is available.
Guide to the Markets – U.S. Data are as of March 31, 2022.
Stocks are securities that represent an ownership share in a company. For companies, issuing stock is a way to raise money to grow and invest in their business. For investors, stocks are a way to grow their money and outpace inflation over time. When you own stock in a company, you are called a shareholder because you share in the company's profits.

A bond is a loan from an investor to a borrower such as a company or government. The borrower uses the money to fund its operations, and the investor receives interest on the investment. The market value of a bond can change over time.

What is a mutual fund? A mutual fund is an investment that pools money from investors to purchase stocks, bonds and other assets. A mutual fund aims to create a more diversified portfolio than the average investor could on their own. Mutual funds have professional fund managers buy securities for you.

Definitions from Nerd Wallet 7/6/21
EQUITIES: S&P 500 INDEX AT INFLECTION POINTS

Source: Compustat, FactSet, Federal Reserve, Refinitiv Datastream, Standard & Poor’s, J.P. Morgan Asset Management.
Dividend yield is calculated as consensus estimates of dividends for the next 12 months, divided by most recent price, as provided by Compustat. Forward price-to-earnings ratio is a bottom-up calculation based on IBES estimates and FactSet estimates since January 2022. Returns are cumulative and based on S&P 500 Index price movement only, and do not include the reinvestment of dividends. Past performance is not indicative of future returns.

Guide to the Markets – U.S. Data are as of March 31, 2022.
EQUITIES: STOCK MARKET SINCE 1900

J.P. Morgan
ASSET MANAGEMENT
ECONOMY: U.S. ECONOMIC RECESSIONS

The Great Depression and post-war recessions
Length and severity of recession

“A recession is a significant decline in economic activity spread across the economy, normally visible in production, employment and other indicators. A recession begins when the economy reaches a peak of economic activity... The committee has determined that a peak in monthly economic activity occurred in the U.S. economy in February 2020.”


Source: BCA, NBER, J.P. Morgan Asset Management.
Bubble size reflects the severity of the recession, which is calculated as the decline in real GDP from the peak quarter to the trough quarter except in the case of the Great Depression, where it is calculated from the peak year (1929) to the trough year (1933), due to a lack of available quarterly data. *Current recession reflects peak (2020) to trough (2020) decline.
ECONOMY: LENGTH AND STRENGTH OF EXPANSIONS
EQUITIES: ANNUAL RETURNS AND INTRA-YEAR DECLINES

S&P intra-year declines vs. calendar year returns
Despite average intra-year drops of 14.0%, annual returns were positive in 32 of 42 years

Source: FactSet, Standard & Poor’s, J.P. Morgan Asset Management.
Returns are based on price index only and do not include dividends. Intra-year drops refers to the largest market drops from a peak to a trough during the year. For illustrative purposes only. Returns shown are calendar year returns from 1980 to 2021, over which time period the average annual return was 9.4%.
Guide to the Markets – U.S. Data are as of March 31, 2022.
INVESTING: IMPACT OF BEING OUT OF MARKET

Plan to stay invested

Losses hurt more than gains feel good. Market lows can result in emotional decision making.

Taking "control" by selling out of the market after the worst days is likely to result in missing the best days that follow. Investing for the long term in a well-diversified portfolio can result in a better retirement outcome.

Returns of the S&P 500
Performance of a $10,000 investment between January 1, 2002 and December 31, 2021

Seven of the best 10 days occurred within two weeks of the 10 worst days
- Six of the seven best days occurred after the worst days
- The second worst day of 2020 — March 12 — was immediately followed by the second best day of the year

Full
Invested
Missed 10
best days
Missed 20
best days
Missed 30
best days
Missed 40
best days
Missed 50
best days
Missed 60
best days

$94,686
$28,260
$16,804
$10,904
$7,372
$5,662
$3,698

$70,000
$60,000
$50,000
$40,000
$30,000
$20,000
$10,000
$0

Source: J.P. Morgan Asset Management analysis using data from Bloomberg. Returns are based on the S&P 500 Total Return Index, an unmanaged, capitalization-weighted index that measures the performance of 500 large capitalization domestic stocks representing all major industries. Indices do not include fees or operating expenses and are not available for actual investment. The hypothetical performance calculations are shown for illustrative purposes only and are not meant to be representative of actual results while investing over the time periods shown. The hypothetical performance calculations are shown gross of fees. If fees were included, returns would be lower. Hypothetical performance returns reflect the reinvestment of all dividends. The hypothetical performance results have certain inherent limitations. Unlike an actual performance record, they do not reflect actual trading, liquidity constraints, fees and other costs. Also, since the trades have not actually been executed, the results may have under- or overcompensated for the impact of certain market factors such as lack of liquidity. Simulated trading programs in general are also subject to the fact that they are designed with the benefit of hindsight. Returns will fluctuate and an investment upon redemption may be worth more or less than its original value. Past performance is not indicative of future returns. An individual cannot invest directly in an index. Data as of December 31, 2021.
EQUITY INVESTING 101: RISK AND THE IMPORTANCE OF TIME AND DIVERSIFICATION

Ways to measure Risk
- Volatility – how much the price of a security fluctuates
- Standard Deviation – a measure of dispersion from the average
- Beta – how volatile is a stock compared to the Index

Cautionary Tales!
- June 2000 - Just 17 months after taking the top job at Procter & Gamble Co., Durk I. Jager abruptly quit. And P&G was stunningly blunt about what went wrong. Investors promptly knocked 9% off a stock that has already suffered this year -- more than 50% below its high of the past 52 weeks.
- After a brutal 2008, Fifth Third’s shares have plunged from $8.26 at the beginning of this year to below $2 a share, an 80 percent decline... Fifth Third wouldn't comment on the stock price or on analysts' opinions.
- As of February 2020, GE shares have fallen a whopping 59% since January 2017, when the company announced it would cut 12,000 jobs. The company’s market cap, ...

### Diversification: total portfolio risk as a function of number of stocks held (%)

<table>
<thead>
<tr>
<th>Number of stocks</th>
<th>Total portfolio risk</th>
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<tr>
<td>1</td>
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<tr>
<td>2</td>
<td>25%</td>
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<tr>
<td>3</td>
<td>18%</td>
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<tr>
<td>4</td>
<td>14%</td>
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<td>5</td>
<td>12%</td>
</tr>
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<td>6</td>
<td>10%</td>
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<tr>
<td>7</td>
<td>8%</td>
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<tr>
<td>8</td>
<td>6%</td>
</tr>
<tr>
<td>9</td>
<td>5%</td>
</tr>
</tbody>
</table>

**Source:** Dresdner Kleinwort Macro research

### Annual total returns, 1996-2008

<table>
<thead>
<tr>
<th>Annual avg. total return</th>
<th>Growth of $100,000 over 20 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stocks</td>
<td>11.3%</td>
</tr>
<tr>
<td>Bonds</td>
<td>6.9%</td>
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<tr>
<td>$0.65B portfolio</td>
<td>5.8%</td>
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</table>

**Note:** These results are based on historical data and are not indicative of future performance. The returns are calculated using a three-factor model and are net of fees and expenses. The returns are for U.S. stocks only and do not include taxes. The index of U.S. stocks used for this analysis is the S&P 500. The results are not adjusted for inflation or for taxes. The results are not indicative of the performance of any specific investment strategy. The results are not intended to be a forecast of future performance. The results are not intended to be a recommendation to buy, sell, or hold any security. The results are not intended to be a forecast of future performance. The results are not intended to be a recommendation to buy, sell, or hold any security.
INVESTING PRINCIPLES: TIME, DIVERSIFICATION AND THE VOLATILITY OF RETURNS

Range of stock, bond and blended total returns
Annual total returns, 1950 - 2021

Returns shown are based on calendar year returns from 1950 to 2021. Stocks represent the S&P 500 Shiller Composite and Bonds represent Strategas/Ibbotson for periods from 1950 to 2010 and Bloomberg Aggregate thereafter. Growth of $100,000 is based on annual average total returns from 1950 to 2021.
Guide to the Markets – U.S. Data are as of March 31, 2022.
EQUITY INVESTING 101: INDUSTRY SECTORS

- **Technology** - computers, software, semiconductors, known for growth
- **Health Care** – pharma, biotech, devices, diagnostics
- **Consumer Discretionary** – retail, auto’s, housing, restaurants, travel
- **Financials** – banks, insurance, financial services (ie. brokers)
- **Communications Services** – telco’s, cable TV, anything that goes through airwaves or wires (media, search, social)
- **Industrials** – aerospace, ag, transportation, electrical, construction, defense.
- **Consumer Staples** – food, soft drinks, alcohol, household products
- **Energy** – oil, gas, and exploration services
- **Materials** – chemicals, mining, paper, fertilizer, and packaging
- **Utilities** – electric, nat gas, and water
- **Real Estate** – malls, office, apts, nursing homes, self storage, and cell towers
### EQUITIES: SECTOR RETURNS

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<td>Financials</td>
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<td>Cons. Disc.</td>
<td>23.4%</td>
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<td>Real Estate</td>
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<td>Telecom</td>
<td>15.3%</td>
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<td>Health Care</td>
<td>17.9%</td>
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<tr>
<td>S&amp;P 500</td>
<td>16.6%</td>
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<tr>
<td>Industrials</td>
<td>15.1%</td>
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<tr>
<td>Materials</td>
<td>11.8%</td>
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<tr>
<td>Energy</td>
<td>10.8%</td>
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<td>Energy</td>
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<td>Energy</td>
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Source: FactSet, Standard & Poor’s, J.P. Morgan Asset Management.

Telecommunications was renamed Communication Services at the end of September 2018. All data are based on Standard & Poor’s Ghos indices and represent total return for stated period. Annualized (perm) return and volatility (vol) represents period of 01/01/18 – 12/31/21. Please see disclosure page at end of index definitions. Past performance is not indicative of future returns. Communication Services (formerly Telecommunication Services) does not have a 10 yr. annualized return and volatility due to the sector restructure in September 2018. Guide to the Markets – U.S. Data are as of December 31, 2021.
INVESTING PRINCIPLES: ASSET CLASS RETURNS

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<tbody>
<tr>
<td>DM Equity</td>
<td>Fixed Income</td>
<td>DM Equity</td>
<td>DM Equity</td>
<td>High Cap</td>
<td>High Yield</td>
<td>Large Cap</td>
<td>Small Cap</td>
<td>Large Cap</td>
<td>High Yield</td>
<td>Large Cap</td>
<td>Small Cap</td>
<td>Large Cap</td>
<td>High Yield</td>
<td>Large Cap</td>
<td>Small Cap</td>
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<tr>
<td>16.2%</td>
<td>7.1%</td>
<td>23.0%</td>
<td>10.0%</td>
<td>21.3%</td>
<td>18.4%</td>
<td>23.9%</td>
<td>20.5%</td>
<td>16.3%</td>
<td>21.9%</td>
<td>25.9%</td>
<td>21.7%</td>
<td>23.7%</td>
<td>25.8%</td>
<td>20.7%</td>
<td>25.5%</td>
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<tr>
<td>Comdty</td>
<td>Cash</td>
<td>Comdty</td>
<td>Comdty</td>
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<tr>
<td>-15.7%</td>
<td>-15.7%</td>
<td>-0.1%</td>
<td>-0.2%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
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</tbody>
</table>
| Source: Bloomberg, FactSet, MSCI, NAREIT, Russell, Standard & Poor’s, J.P. Morgan Asset Management.  
Guide to the Markets – U.S. Data are as of March 31, 2022.  

Data are as of March 31, 2022.

Source: Bloomberg, FactSet, MSCI, NAREIT, Russell, Standard & Poor’s, J.P. Morgan Asset Management.
EQUITY INVESTING 101: WHAT MAKES A GREAT BUSINESS?

- **Economic Moats**
  - Size
  - Cost Advantages
  - Distribution Networks
  - Location, Location, Location
  - The Industry Matters
    - Some industries are structurally advantaged
  - Intangible Assets
    - Brands
    - Patents
    - Regulatory
  - Switching Costs
    - Make it tough for customers to use a competitor’s product
  - Network Effects
    - The value of a product or service increases with the number of users

- **Porter’s 5 Forces**
  - Threat of New Entrants
  - Intensity of Competitive Rivalry
  - Bargaining Power of Buyers
  - Bargaining Power of Suppliers
  - Threat of Substitutes
QUESTIONS?

"This toy company looks like a good investment. Their board of directors includes Santa Claus, the Easter Bunny, Mother Goose and the Great Pumpkin."
RESERVED SLIDES
SAVING

Annual savings needed if starting today

<table>
<thead>
<tr>
<th>Current household income</th>
<th>Savings rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$30,000</td>
<td>2%</td>
</tr>
<tr>
<td>$40,000</td>
<td>3%</td>
</tr>
<tr>
<td>$50,000</td>
<td>4%</td>
</tr>
<tr>
<td>$60,000</td>
<td>5%</td>
</tr>
<tr>
<td>$70,000</td>
<td>6%</td>
</tr>
<tr>
<td>$80,000</td>
<td>7%</td>
</tr>
<tr>
<td>$90,000</td>
<td>8%</td>
</tr>
</tbody>
</table>

Model assumptions

Pre-retirement portfolio
- 60/40 diversified portfolio
- Inflation rate: 2.3%
- Retirement age:
  - Primary earner: 65
  - Spouse: 63
- Years in retirement: 35

Household income $30k

How to use:

- Go to the intersection of your current age and your closest current household income.
- This is the percentage of your current household income to contribute annually going forward if you have $0 saved for retirement today.
- Example: A 40-year-old with household income of $50,000 and $0 saved for retirement today may need to save 12% every year until retirement.

This chart is for illustrative purposes only and must not be relied upon to make investment decisions. J.P. Morgan Asset Management’s JPNNC model is based on a blend of proprietary long-term Capital Market Assumptions (from 10 years) and equilibrium returns, and an 80% confidence level. Portfolios are described as equity/bond percentages (e.g., a 40/60 portfolio is 40% equities and 60% bonds). Assumptions include household income replacement rates shown on table 1. Consult with a financial professional for a more personalized assessment. Allocations, assumptions and expected returns are not meant to represent JPNNC performance. Given the complex non-linear relationships involved, we advise clients to rely on judgment as well as quantitative optimization approaches in setting strategic allocations. References to future returns for either asset allocation strategies or asset classes are not promises or even estimates of actual returns on client portfolios or others.
## Retirement savings checkpoints

<table>
<thead>
<tr>
<th>Current age</th>
<th>$60k</th>
<th>$65k</th>
<th>$70k</th>
<th>$80k</th>
<th>$90k</th>
<th>$95k</th>
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<tbody>
<tr>
<td>25</td>
<td>0.1</td>
<td>0.1</td>
<td>0.3</td>
<td>0.5</td>
<td>0.6</td>
<td>0.8</td>
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<tr>
<td>30</td>
<td>0.2</td>
<td>0.5</td>
<td>0.7</td>
<td>1.0</td>
<td>1.1</td>
<td>1.3</td>
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<td>35</td>
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<td>0.9</td>
<td>1.1</td>
<td>1.5</td>
<td>1.7</td>
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<td>40</td>
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<td>1.5</td>
<td>2.0</td>
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<td>2.4</td>
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<td>3.5</td>
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<td>50</td>
<td>2.5</td>
<td>3.2</td>
<td>3.7</td>
<td>4.4</td>
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<td>5.1</td>
</tr>
<tr>
<td>55</td>
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</tbody>
</table>

This analysis assumes you would like to maintain an equivalent lifestyle in retirement. Household income is assumed to be gross income (before taxes and savings).

### How to use:
- Go to the intersection of your current age and your closest current household income.
- Multiply your current household income by the checkpoint shown. This is the amount you should have saved today, assuming you continue contributing 5% going forward.
- Example: For a 40-year-old with a household income of $70,000: $70,000 * (1.1 * 1.1 * 1.1) = $70,000

*Household age 25-35 earning $30k may need to save less than the 5% annual savings rate assumed in this analysis. If they were to save 5% annually going forward, they would need to have current assets to be on track. They should refer to the annual savings rate they need to be saving today (on page 18). This plan is for illustrative purposes only and must not be relied upon in making investment decisions.

### Model assumptions
- Annual gross savings rate: 5%
- Pre-retirement portfolio: 60/40 diversified portfolio
- Post-retirement portfolio: 40/60 diversified portfolio
- Inflation rate: 2.3%
- Retirement age:
  - Primary earner: 65
  - Spouse: 65
- Years in retirement: 35

*J.P. Morgan Asset Management’s IPR® model is based on proprietary, Long-Term Capital Market Assumptions (the 10-year) and equilibrium returns, and an 80% confidence level. Portfolios are described as equity and 40% bonds. Assumptions include household incomes replacement rates shown on page 15. Consult with a financial professional for a more personalized analysis. Analysis, assumptions, and expected returns are not meant to represent J.P. Morgan Asset Management’s investment management process or approach. J.P. Morgan Asset Management encourages investors to seek the advice of a financial professional. J.P. Morgan Asset Management has no obligation to update the information contained in this document. JPMorgan Asset Management is the global asset management division of JPMorgan Chase & Co.
EQUITY INVESTING 101: HOW DO YOU VALUE A STOCK?

P/E Ratio
Price of a stock/Earnings per Share

Other Valuation Methods
- Price to Sales
- Price to Book
- Dividend Discount Model
- EV/EBITDA
- Discounted Future Cash Flows
- “A company's value is equal to all the cash it will generate in the future.” Pat Dorsey
The New Normal. In 2009 Bill Gross suggested that investors would need to question many long-held beliefs as they adjust to this new normal. Among them is the idea that risky assets such as stocks are always better for the long run. In the subdued economic climate ahead, risk-taking is simply not going to be as rewarding, so investors may want to switch down to a more sedate asset allocation mix with more bonds and stable blue chip stocks.

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Average Return</th>
<th>Standard Deviation</th>
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<tbody>
<tr>
<td>Large-Cap Stocks</td>
<td>10.3%</td>
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<tr>
<td>Small-Cap Stocks</td>
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<td>31.3%</td>
</tr>
<tr>
<td>Long-term Corp Bonds</td>
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<tr>
<td>Long-term Gov’t Bonds</td>
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<td>Inter-term Gov’t Bonds</td>
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<tr>
<td>Inflation</td>
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# EQUITIES: FACTOR PERFORMANCE

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<tbody>
<tr>
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| Source: FactSet, MSCI, Russell, Standard & Poor’s, J.P. Morgan Asset Management. The MSCI High Dividend Yield Index aims to offer a higher than average dividend yield relative to the parent index that passes dividend sustainability and persistence screens. The MSCI Minimum Volatility Index optimizes the MSCI USA Index using an estimated security co-variance matrix to produce low absolute volatility for a given set of constraints. The MSCI Defensive Sectors Index includes: Consumer Staples, Energy, Health Care and Utilities. The MSCI Cyclical Sectors Index contains: Consumer Discretionary, Communication Services, Financials, Industrials, Information Technology and Materials. Securities in the MSCI Momentum Index are selected based on a momentum value of 12-month and 6-month price performance. Constituents of the MSCI Sector Neutral Quality Index are selected based on stronger quality characteristics to their peers within the same GICS sector by using three main variables: high return-on-equity, low leverage and low earnings variability. Constituents of the MSCI Enhanced Value Index are based on three variables: price-to-book value, price-to-forward earnings and enterprise value-to-cash flow from operations. The Russell 2000 is used for small cap. The MSCI USA Diversified Multiple Factor Index aims to maximize exposure to four factors – Value, Momentum, Quality and Size. Annualized volatility is calculated as the standard deviation of quarterly returns multiplied by the square root of 4. Guide to the Markets – U.S. Data are as of March 31, 2022.
The retirement equation

A sound retirement plan

Make the most of the things that you can control but be sure to evaluate factors that are somewhat or completely out of your control within your comprehensive retirement plan.