

2020

COMPREHENSIVE ANNUAL FINANCIAL REPORT

For the Fiscal Year Ended June 30, 2020



INPRS is a component unit and a pension trust fund of the State of Indiana.



Prepared through the joint efforts of INPRS's team members.
Available online at www.in.gov/inprs

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INPRS is a component unit and a pension trust fund of the State of Indiana.

INPRS is a trust and an independent body corporate and politic. The system is not a department or agency of the state, but is an independent instrumentality exercising essential governmental functions (IC 5-10.5-2-3).

FUNDS MANAGED BY INPRS	ABBREVIATIONS USED
Defined Benefit	DB Fund
1. Public Employees' Defined Benefit Account	PERF DB
2. Teachers' Pre-1996 Defined Benefit Account	TRF Pre-'96 DB
3. Teachers' 1996 Defined Benefit Account	TRF '96 DB
4. 1977 Police Officers' and Firefighters' Retirement Fund	'77 Fund
5. Judges' Retirement System	JRS
6. Excise, Gaming and Conservation Officers' Retirement Fund	EG&C
7. Prosecuting Attorneys' Retirement Fund	PARF
8. Legislators' Defined Benefit Fund	LE DB
Defined Contribution	DC Fund
9. Public Employees' Defined Contribution Account	PERF DC
10. My Choice: Retirement Savings Plan for Public Employees	PERF MC DC
11. Teachers' Defined Contribution Account	TRF DC
12. My Choice: Retirement Savings Plan for Teachers	TRF MC DC
13. Legislators' Defined Contribution Fund	LE DC
Other Postemployment Benefit	OPEB Fund
14. Special Death Benefit Fund	SDBF
15. Retirement Medical Benefits Account Plan	RMBA
Custodial	Custodial Fund
16. Local Public Safety Pension Relief Fund	LPSPR

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\$30.7 Billion

Fair value of defined benefit assets

\$5.8 Billion

Fair value of defined contribution assets

2.6%

Time-weighted rate of return on defined benefit investments



Report on Investment Activities



August 7, 2020

Board of Trustees
Indiana Public Retirement System
One North Capitol Avenue
Indianapolis, IN 46204

Dear Trustees:

Verus is pleased to provide the Board of Trustees of the Indiana Public Retirement System ("INPRS") with an overview of the market environment, an update on performance, and a summary of recent developments for the fiscal year ended June 30, 2020.

Investment Landscape

■ *Economy, COVID-19, Fiscal & Monetary Response*

During the latter half of 2019, global economies generally exhibited moderate and positive economic growth, inflation remained mild, central bank policies were accommodative to further growth, labor markets had fully recovered from the Global Financial Crisis, and economic surprises were few. Risk assets delivered robust performance during the second half of the year. The U.S. showed leadership (S&P 500 +10.9 percent) with International Developed and Emerging Market Equities close behind (MSCI EAFE +7.0 percent, MSCI Emerging Markets 7.1 percent). Sovereign bonds largely moved sideways outside of U.S. Treasuries (Bloomberg Barclays U.S. Treasury +1.6 percent) as longer-dated Treasury yields continued to trend lower. High-yield credit (Bloomberg Barclays Corporate High Yield +4.0 percent) posted solid performance, as credit spreads compressed modestly. Commodities posted solid performance as well (Bloomberg Commodity Index +2.5 percent), led by the precious metals (+9.2 percent) component as gold prices soared.

Investors' main concerns in the market appeared to be around troubled U.S.-Chinese relations, the resulting trade conflict which could interrupt economic progress and corporate profits, and even the potential for military conflict. However, the relationship between the two superpowers was seemingly on a more conciliatory track. A series of meetings between the U.S. and Chinese officials culminated in a "phase one" deal addressing agricultural trade, intellectual property protections, and some loose agreements on how China would manage its currency.

In early 2020, the calm and relatively stable environment began to shift. A novel coronavirus (COVID-19) began spreading through Wuhan, the capital of China's Hubei province. Though Wuhan ranks as the 9th largest city in China with nearly 12 million inhabitants, it is materially larger than New York City by population. As the virus began to spread, the Chinese government essentially locked down Wuhan, and implemented a series of rather draconian containment measures in an attempt to keep the virus within the city. Unfortunately, containment efforts were ineffective, and the virus continued to spread, from China to Italy to Europe more broadly, to the United States, and to the rest of the world. By the end of July, the virus had spread to over 17 million people in 213 countries and territories, resulting in over 660,000 deaths. The sudden impact of this global pandemic on economic activity and markets was unprecedented. News flow over the first half of 2020 was centered on the trajectory of the virus, the status of voluntary and

Report on Investment Activities, continued

involuntary social distancing controls, and fiscal and monetary policy support provided in efforts to mitigate the economic damage of the pandemic.

One of the most immediate effects of the forced closure of businesses around the world was an unparalleled shock to the global labor market, which had been chugging along through the second half of 2019. In the United States, approximately 10 million workers applied for unemployment benefits in the last two weeks of March alone. In the single week ending March 27th, nearly seven million people applied for those benefits. For context, during the Global Financial Crisis, the greatest number of Americans that applied for unemployment assistance in a single week was 665,000. The unemployment rate rose from a 50-year low of 3.5 percent in February to 14.7 percent in April—the worst level since the Great Depression.

U.S. real GDP contracted sharply on a quarter-over-quarter basis in Q2, falling -32.9 percent, and down -9.5 percent over the past year. The slowdown consisted of decreased consumer spending, exports, inventory investment, fixed investment, as well as state and local government expenditures. Federal government spending partly offset the deceleration. While significant, this shock to the economy was in line with expectations. Investors appear to expect GDP to bounce back partially in 2020 with a near full recovery in 2021, aided by vast government fiscal and monetary policy responses.

Between December 2015 and December 2018, the Federal Reserve hiked rates nine times to a range of 2.25-2.5 percent. In the second half of 2019, the Fed cut rates by 0.25 percent three times, and then COVID-19 hit. The size and pace of the shutdowns necessitated central bank intervention on a massive scale to prevent a possible breakdown in financial market functioning. The Federal Reserve cut its range for the federal funds rate by 1.50 percent to 0.0-0.25 percent, and dusted off a variety of global financial crisis-era liquidity facilities to help calm markets, which were posting consecutive days of high single-digit (even double-digit) percentage moves. The Federal Reserve's balance sheet swelled from around \$4.7 trillion to \$7.2 trillion between the end of March and the beginning of June as the New York Fed's trading desk purchased massive amounts of U.S. Treasuries and mortgage-backed securities. Additionally, the Fed opened facilities allowing it to buy corporate debt through ETFs, and even expanded eligibility for those programs to include junk bonds that had held investment-grade credit ratings prior to the onset of the pandemic. On the fiscal front, Congress passed the CARES Act, resulting in the distribution of \$1,200 checks to most Americans, the establishment of the Paycheck Protection Program, and the implementation of \$600 in weekly additional unemployment benefits.

- *Markets and asset class performance*

COVID-19 began to course through the U.S. in the first quarter, leading to a significant selloff in risk assets between February and March, though these assets went on to recoup most of those losses in the second quarter. The S&P 500 Total Return Index plunged -33.8 percent between February 19th and March 23rd, before rising +39.3 percent by the end of the second quarter. At quarter-end, the S&P 500 reached 3100—placing the index within 10 percent of the February high water mark of 3386.

Over the full trailing year, the S&P 500 (+7.5 percent) outperformed both emerging market equities (MSCI Emerging Markets Index -3.4 percent) and international developed equities (MSCI EAFE Index -5.1 percent) in U.S. dollar terms. China (MSCI China Index +13.1 percent) supported



Report on Investment Activities, continued

emerging market equity performance substantially, likely due to having moved into the recovery phase relatively quickly. The J.P. Morgan Emerging Market Currency Index, a basket of ten emerging market currencies, depreciated roughly -14.0 percent relative to the dollar, presenting material headwinds for U.S. investors in emerging market equities.

Bonds rallied for much of the fiscal year, and ten-year Treasury yields fell from 2.0 percent to 0.66 percent, establishing fresh all-time closing lows of 0.54 percent along the way. Holding duration in portfolios provided a significant downside ballast. The Bloomberg Barclays Long Duration Treasury Index returned 25.4 percent, topping the fixed income performance table over the one-year period. The rally in European sovereign bonds was more muted, as yields had less room to fall and the European Central Bank preferred not to push their main deposit rate below -0.50 percent.

Credit spreads jumped considerably in Q1, leading to poor performance in credit over the quarter. On March 23rd, the option-adjusted spreads of the Bloomberg Barclays Aggregate Corporate and Corporate High Yield indices topped out at 3.7 percent and 11.0 percent, respectively. From a sector perspective, stress in the energy market exacerbated the blowout in spreads as concerns over the crude oil outlook worked their way into debt pricing. In the second quarter, however, as corporate credit facilities announced by the Fed in March became operational, spreads fell—back down to 6.26 percent for high yield credit and 1.50 percent for investment grade credit—resulting in a performance comeback. Over the fiscal year, investment-grade credit posted performance of 9.5 percent while high-yield credit underperformed, returning 0.0 percent.

Exposure to commodities hurt investors over the fiscal year, but especially in the first half of 2020, primarily due to the precipitous decline in the oil market as demand dried up alongside the slowdown in global economic activity. The Bloomberg Commodity Index returned -17.4 percent over the fiscal year, and the Energy component of the index (Bloomberg Energy Sub-Index -45.7 percent) suffered far more severe losses. Precious metals, however, were a bright spot, and returning +24.2 percent over the fiscal year, primarily due to an incredible rally in gold prices. Spot gold prices rose from \$1410/oz to \$1781/oz, closing in on the prior all-time high level of \$1900 which was established in late 2011.

- *Outlook*

We will continue to monitor the progression of COVID-19 and its impacts on global health and economic activity, the shape and speed of the economic recovery here in the United States and elsewhere (which will likely determine the path of risk assets), central bank actions and the degree to which future support is offered to economies and markets, and, lastly, the evolving relationship between the world's two great superpowers—the United States and China—which will have far-reaching implications based on the path which this relationship takes. Knowing how all these interconnected issues resolve themselves is of course, impossible, and so prudent diversification continues to be the best course of action.

Plan Performance¹

The INPRS consolidated defined benefit investment portfolio (“the Portfolio”) earned a 2.6 percent return net of fees for the fiscal year ending June 30, 2020. This return outperformed the policy target index² return by 0.5 percent but underperformed the long-term actuarial assumed return (6.75 percent) by 4.2 percent.



Report on Investment Activities, continued

Portfolio risk as measured by standard deviation, increased modestly at the beginning of 2020. The trailing three-year annualized standard deviation of returns was 6.5 percent for the portfolio and 7.1 percent for the target index; this compares with 5.8 percent and 6.2 percent, respectively, over five years. Over the trailing 10-year period³, standard deviation for both the portfolio and the target index was 6.0 percent, resulting in a Sharpe Ratio of 0.8 for the portfolio and 0.6 for the target index.

Plan Activity

During the 2020 fiscal year, Verus and INPRS' staff collaborated on a number of projects. Verus compiled a fee benchmarking study to assist in determining that the underlying investment management fees paid are reasonable. Together we worked with staff to administer and complete an RFP for several emerging markets equity and debt mandates, resulting in improved conviction with the underlying strategies utilized. Verus also collaborated with staff on an RFP for cash overlay and passive risk parity implementation services, resulting in the retention of a new investment manager and a lower cost method of obtaining market exposure to risk parity.

Verus assisted the INPRS team in developing an active risk budget for the total plan as well as component asset classes. We conducted a strategic review of the commodities asset class considering historical performance, underlying drivers of go-forward return, diversification properties, varying sub-asset class compositions, and the asset class's interplay with expected and realized inflation. We also conducted a comprehensive structure review of INPRS' hedge fund program.

Ongoing work also involved the early steps of the asset-liability study, which include an enterprise risk tolerance study and asset-liability study education; we look forward to finalizing the asset-liability study during the 2021 fiscal year.

Verus values our relationship with INPRS and we appreciate the privilege of working with the Board and staff in designing policies and supporting decisions aimed at meeting the Plan's investment objectives. We remain confident in the direction of the Portfolio given the System's demographics, fiscal strength, and well-designed investment strategy. We look forward to continuing our partnership as we navigate ever-changing capital markets.

Sincerely,



Jeffrey J. MacLean
Chief Executive Officer



Report on Investment Activities, continued

¹ Rates of return are net of fees and based on calculations made by the System's custodian, Bank of New York Mellon, and are presented using a time weighted rate of return methodology based upon fair value.

² The target index weights for each asset class benchmark are set by the target asset allocation. The return for Risk Parity, Real Estate, and Private Equity are equal to the asset class returns and not the benchmark.

³ The 10-year target index return reflects the current INPRS policy index history from July 2012 on. Prior to July 2012, this index reflects the average index return for the PERF & TERF plans.

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Verus – also known as Verus Advisory™.



Report from the Chief Investment Officer

INPRS's Defined Benefit Investment Imperatives

Established in fiscal year 2012, three long-term imperatives that are vital to the continued health of the System's defined benefit plans have served as the guide for the investment team. Every strategic, tactical, and operational decision that is made must have the expectation of positively contributing to at least one of these imperatives.

- 1) **Achieve the long-term rate of return assumption.** Effective fiscal year 2013, INPRS's Board set the long-term rate of return assumption at 6.75 percent, and again in fiscal year 2015, the Board reaffirmed 6.75 percent as the appropriate long-term assumption. In order for the System to maintain a healthy funded status, it is essential to achieve this rate of return over the long-term (defined as 10+ years in INPRS's Investment Policy Statement).
- 2) **Accomplish the first imperative as effectively and efficiently as possible.** While it is important to establish an asset allocation that is expected to meet the target rate of return over a long time horizon, as fiduciaries, it is also important to maintain focus on maximizing the return per unit of risk, limiting return volatility, and maximizing cost efficiency.
- 3) **Maintain enough liquidity to make retirement payments on time.** As the System matures, retirement payments will be a greater cash outflow each year. As a result, it is critical to maintain an appropriate level of liquidity to ensure payments are made on time and without causing undue stress to the investment portfolio.

The Fiscal Year in Review (Defined Benefit Portfolio)¹

A year that started with little volatility and positive returns across the vast majority of markets in the first six months quickly turned sour as COVID-19 swept across the globe in the back half of the year. The virus caused countries to effectively shut down to help contain its spread, and as a result, global growth experienced a sharp slowdown. With questions around how long and how severe the outbreak would be, central banks and governments were forced to use various aggressive measures to provide a stop-gap for spiking unemployment, falling incomes, and extreme volatility across global markets. The size and speed of the stimulus from many countries was unprecedented and so too was the market's response. Despite experiencing a 38 percent drawdown at the beginning of the pandemic's spread, global equities still managed to finish the year with a positive 1.2 percent return.

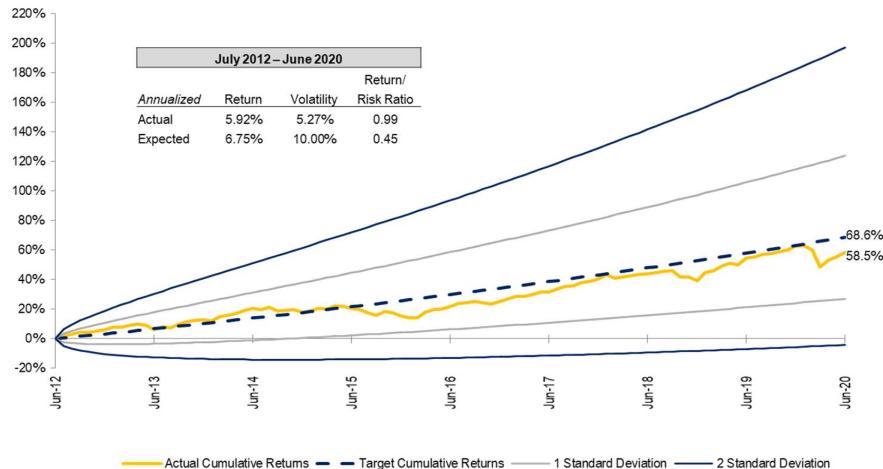
The consolidated defined benefit assets returned 2.6 percent net of all fees over the fiscal year, underperforming the target rate of return, and ended with a fair value of \$30.7 billion. In the first half of the year, the portfolio continued to benefit from easy central bank policy that had started the prior fiscal year and had pushed interest rates to historically low levels. As a result, each asset class had a positive return over this time period, and the portfolio generated a 5.2 percent return. In the second half of the year, government bonds and inflation-linked bonds anchored the portfolio during the most severe weeks of the equity sell-off and set-up a scenario where the gains could be used to rebalance back into equities in mid-March. By limiting the severity of the losses, the portfolio earned a -2.5 percent return in the second half of the fiscal year.

Based on extensive research of the various asset classes and their performance in different economic environments through time, it was determined starting in 2012 that a new risk-balanced framework better fit our first two imperatives. Developed from that research, the following chart illustrates the projected range of outcomes for INPRS's asset allocation around the 6.75 percent return target (blue dotted line). This visual is meant to track the cumulative performance of the actual portfolio (yellow solid line) versus those expectations along the way. Although the portfolio has underperformed the return target since adopting the new asset allocation strategy in 2012, the cumulative return is well within our range of expected outcomes.

¹ Rates of return specific to INPRS's portfolio are based on calculations made by INPRS's custodian, Bank of New York Mellon, and are presented using a time-weighted rate of return methodology based upon fair value.

Report from the Chief Investment Officer, continued

INPRS Defined Benefit Net of Fee Cumulative Return



The following table shows INPRS's annualized net-of-fees returns over the same time period. Since inception of the revised strategy, the portfolio has generated an annual return of 5.2 percent above the return of cash and outperformed the average historical spread for the asset allocation over cash by 0.7 percent annually².

INPRS Defined Benefit Annual Returns (Net of Fees)³

	FY2020	Since 7/2012
PERFORMANCE (NET OF FEES)		
INPRS DB Total Return	2.56%	5.92%
Target Rate of Return	6.75%	6.75%
Cash Return (FTSE 3-Month Treasury)	1.56%	0.74%
Projection for Cash Return	2.25%	2.25%
INPRS DB Return in Excess of Cash	1.00%	5.18%
Target Rate of Return in Excess of Cash	4.50%	4.50%

The prior charts highlight the recent challenges from the historically low interest rate environment. Due to the low return on cash since 2012, the portfolio's total performance has fallen short of the target rate of return assumption of 6.75 percent thus far. However, the target rate of return was established based on a much longer time horizon. As such, the asset allocation that was constructed to meet the return objective will ultimately be measured over decades rather than a few years.

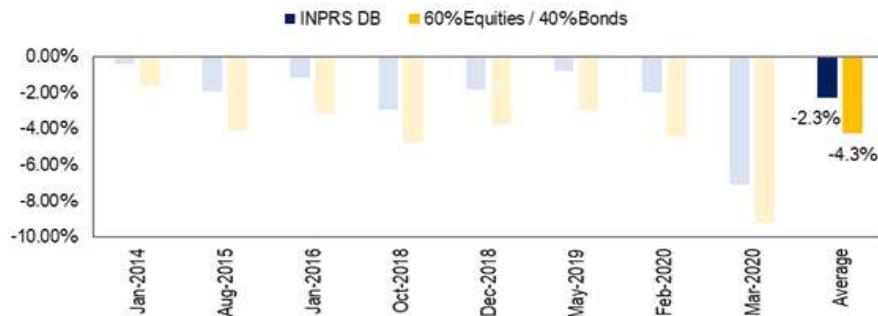
² Cash return based on Citigroup 3mo Treasury (Source: INPRS's custodian, Bank of New York Mellon).

³ Excess return presented by INPRS's general consultant, Verus, at the June 2015 INPRS Board meeting. INPRS's current target asset allocation was approximated historically using available indices. Cash return based on the one-month US Treasury bill return from 1937 - 2015 (source: Dimensional Fund Advisors' Matrix Book 2016 of Historical Returns Data).

Report from the Chief Investment Officer, continued

With this long-term focus in mind, it is important that we constantly monitor the portfolio over various market environments and evaluate whether it performed as we expected. One of the primary reasons for diversifying the portfolio was to be less impacted by the performance of equities. In the chart below, we evaluate this by looking at various historical months that global equities had a loss of 2 percent or worse since July 2012. As shown, INPRS's defined benefit portfolio continues to hold-up well on a relative basis during nearly all of these occurrences and, consistent with our expectations, has a materially lower loss on average than a portfolio with 60 percent equities and 40 percent bonds.

Defined Benefit Performance During Equity Drawdowns Since July 2012



Performance Attribution

Looking closer at fiscal year 2020, the returns of INPRS's separate asset classes are shown on the following page. All asset classes, except commodities, had positive returns over the course of the year. One key theme, that has been a staple in supporting global markets since the 2008 financial crisis, re-appeared over the course of fiscal year 2020: easy monetary policy from major central banks. In the first half of the year, the Fed and other central banks reversed course after trying to "normalize" interest rates the few years prior and began to lower interest rates once again. This decline in interest rates along with the market pricing in lower interest rates going forward set the stage for stronger growth prospects and positive performance from all asset classes in the first half of the year. However, easier policy from the Federal Reserve and other central banks not only continued in the second half of the year but accelerated as COVID-19 swept across the globe.

With interest rates quickly moving back to historic lows and growth prospects in question due to the pandemic, various types of government bonds were the top performing asset classes in fiscal year 2020. Inflation-linked bonds led all public asset classes with a return of 14.6 percent. This strong performance was anchored by INPRS's exposure to long duration U.S. Treasury Inflation-Protected Securities or TIPS, which returned 21 percent. The fixed income asset class was also accretive to the plan's performance and produced a 9.6 percent return. INPRS's long duration exposure to the U.S. Treasury market was the primary driver of this strong performance, as the index produced over a 25 percent return.

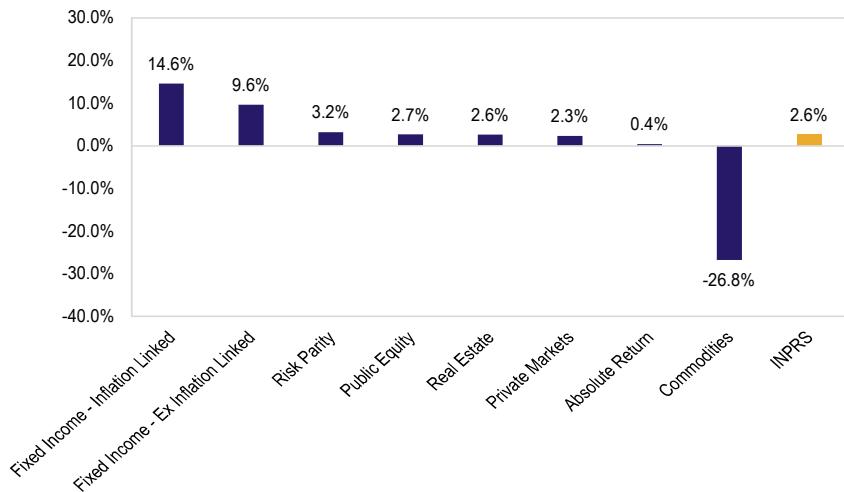
While interest rates remained supportive throughout the year, the COVID-19 shock caused declines in economic conditions that had not been seen since the Great Depression. Mass shutdowns across many countries brought income and spending to a halt, and all markets outside of government bonds sold-off sharply. INPRS's portfolio was not immune to these pressures. The public equity and commodities portfolios experienced a 34 percent and 46 percent drawdown, respectively, during this time period. However, in response to the crisis, swift action from central banks and governments around the globe produced massive monetary and fiscal stimulus packages that helped support income and spending. As a result, equities and other asset classes that benefit from positive growth surprises came roaring back toward the end of the fiscal year. INPRS's private markets, real estate, and public equity portfolios each finished the fiscal year with positive returns ranging from 2.3 to 2.7 percent. The commodities portfolio did not seem to benefit from the additional liquidity and stimulus as much as equity markets though and still ended the year with a negative 26.8 percent return.

The risk parity portfolio has been constructed with the most diversified collection of public markets exposure we can find. As a result, its performance is driven by the asset class performances mentioned above; however, the portfolio is designed to not be overly dependent on any single asset class. Given the positive returns across most public asset classes, the risk parity portfolio produced a 3.2 percent return this year.

The absolute return portfolio was constructed to limit correlation to equity, credit, and fixed income markets and help provide smoother performance for the overall portfolio during these difficult periods. While the portfolio did limit the drawdown in the peak of the equity sell-off in fiscal year 2020, it did not rebound as strongly as we saw in other asset classes and ended with a positive 0.4 percent return this year.

Report from the Chief Investment Officer, continued

1-Year Defined Benefit Asset Class Returns as of June 30, 2020



The chart above provides an incomplete picture, though, as it does not reflect the modifications we have made to our allocation to better diversify across economic environments and across asset classes given their varying levels of risk. The following table adjusts for this by taking into account the weight of each asset class in the portfolio, each asset's sensitivity to different economic environments, and its return over the past year. By linking these components, we are able to observe how certain economic environments performed and the contribution to total return that each asset class provided.

In fiscal year 2020, assets that perform well when growth is lower than expected (e.g. government bonds) outperformed those that perform well when growth is higher than expected (e.g. equities, private markets), as the pandemic negatively affected growth versus what the market was anticipating to start the year. This was the opposite of the prevailing dynamic since 2012, as can be seen in the far-right column of the table. The generally pro-growth environment from 2012 through 2019 had been favorable for assets that perform well when growth is better than expected, including equities, private markets, real estate, and corporate credit.

Contribution to Total Defined Benefit Return as of June 30, 2020

	% Exposure in INPRS Portfolio	FY2020	Since 7/2012
PERFORMANCE (NET OF FEES)			
INPRS DB Total Return		2.56%	5.92%
Cash Return (3m Treasury)		1.56%	0.74%
INPRS DB Return in Excess of Cash	1.00%	5.18%	
EXCESS RETURN CONTRIBUTION BY ECONOMIC ENVIRONMENT			
Rising Growth	33.0%	-0.36%	2.02%
Falling Growth	17.0%	0.97%	0.60%
Rising Inflation	16.0%	-0.50%	0.08%
Falling Inflation	34.0%	1.11%	2.55%
<i>Other¹</i>		-0.23%	-0.06%
EXCESS RETURN CONTRIBUTION BY ASSET CLASS			
Public Equity	21.9%	0.25%	2.01%
Fixed Income (ex Inflation-Linked)	19.4%	1.57%	0.87%
Private Equity	10.7%	0.03%	1.46%
Private Credit	1.5%	0.04%	0.01%
Risk Parity	13.4%	0.21%	0.44%
Absolute Return	10.6%	-0.12%	0.34%
Real Estate	6.8%	0.07%	0.52%
Fixed Income (Inflation-Linked)	7.3%	0.95%	0.28%
Commodities	6.6%	-1.98%	-0.76%
Cash	1.8%	0.21%	0.08%
<i>Other¹</i>		-0.23%	-0.06%

¹ Other results from the differences between the actual allocation through time relative to the average allocation over the period.

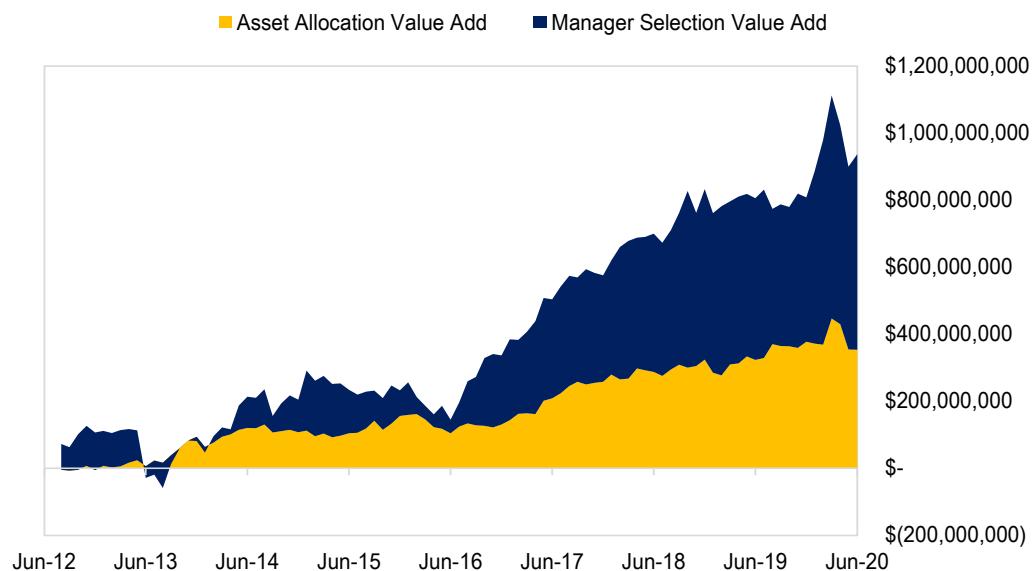
The average allocation is used to estimate the contribution from the various factors shown.

Report from the Chief Investment Officer, continued

Performance Relative to the Benchmark

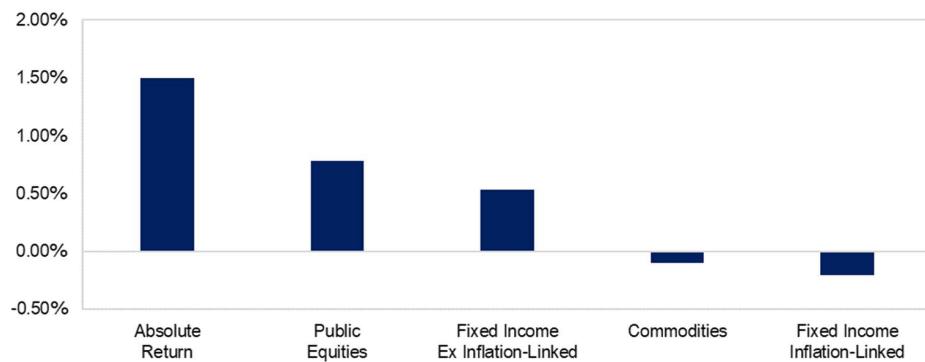
In fiscal year 2020, the investment team achieved a return that was 0.5 percent above the target asset allocation benchmark, net of all fees. The benchmark is meant to reflect what performance would have been had the portfolio been at target weights in each asset class the entire year and invested in passive strategies (e.g. index funds). Both the tactical asset allocation and manager selection decisions made by the team this year added value to the portfolio. This continued the positive trend of the past seven years as the outperformance generated by the investment team since July 2012 has produced approximately \$937 million in added value (asset allocation + manager selection) over a portfolio of merely passive investments. To put this into perspective, these additional returns have been large enough to cover all of the PERF retirement payments made in fiscal year 2020.

Cumulative Excess Returns over the Defined Benefit Target Allocation (Net of Fees)



Breaking that result down further, you can see that manager selection has created a large portion of the outperformance over the past eight years because a majority of public asset classes have outperformed their benchmarks.

Annualized Performance Relative to Benchmarks (Public Markets)
July 2012-June 2020

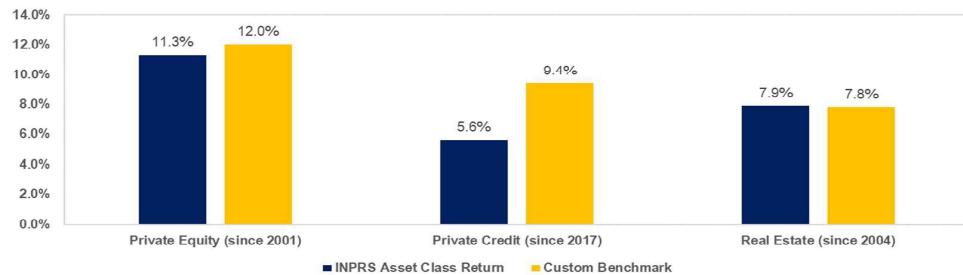


Report from the Chief Investment Officer, continued

INPRS's investments in private markets and real estate are not included in the value-add chart above because the managers in these asset classes control the timing of cash flows and, thus, we believe a different measure better captures their performance relative to a benchmark (i.e. internal rate of return or IRR). However, the chart below gives some perspective on their outperformance since inception.

The private equity portfolio has continued to be a strong performer since inception with an annualized return of 11.3 percent since 2001, outperforming a blend of comparable public market indices, which includes small-cap equities and high yield bond indices. The private equity benchmark shown below includes the returns of these public market equivalents plus an additional 3 percent return that is meant to factor-in the illiquidity and complexity that comes with investing in the asset class. While the private equity portfolio has not quite achieved this higher mark since inception, the performance is reported with a lag, and the benchmark return does not yet include the drawdown of equity and credit markets in the second half of the year. The private credit portfolio is also showing underperformance versus its benchmark below given it is subject to the same lag effect as private equity and because many of the investments have not had ample time to mature, as commitments to new funds only started a few years ago. Finally, the real estate portfolio continues to be accretive to the plan with an annualized return of 7.9 percent since 2004, outperforming its public market equivalent benchmark since inception.

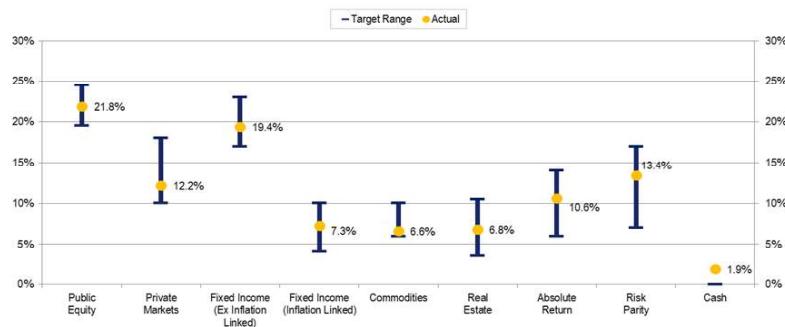
**Annualized Performance (IRR) Relative to Benchmarks (Private Markets)
Since Inception of Each Asset Class⁴**



Current Portfolio Exposures

As previously mentioned, INPRS set out on a course seeking more balance across economic and market environments starting in fiscal year 2012 with the approval of a new asset allocation strategy. Despite slight revisions to the asset allocation during the last asset-liability study in fiscal year 2015 that resulted in a marginally higher expected return and return-risk ratio, the outcome reaffirmed the path of diversification INPRS had previously chosen and continues to pursue. As such, INPRS rebalanced as needed over the course of fiscal year 2020 to stay within the Board-approved allocation bands for each asset class. The allocation as of June 30, 2020 can be found in the chart below.

Defined Benefit Asset Allocation as of June 30, 2020



⁴ As of March 31, 2020. Based on the first capital calls made by INPRS: Private Equity inception date is 5/14/2001; Private Credit inception date is 10/17/2017; and Real Estate inception date is 2/26/2004. The Private Equity custom benchmark is comprised of the following components lagged one quarter plus 3.00%: 60% Russell 2000 Index, 20% EAFE Small Cap Index, 15% CS High Yield Index, and 5% CS Western European High Index (Hedged). The Private Credit custom benchmark is comprised of the following components plus 1.50%: 50% Credit Suisse Leveraged Loan Total Return, 33% Wells Fargo BDC Total Return, and 17% Credit Suisse Western European Leveraged Loan. The Real Estate custom benchmark is comprised of the following components lagged one quarter: 70% FTSE NAREIT All Equity REITS Index and 30% Barclays CMBS Index.

Report from the Chief Investment Officer, continued

Liquidity

In fiscal year 2020, the pandemic and subsequent economic shock sent ripples through various markets. Liquidity tightened and trading costs increased materially as investors were factoring-in a wide range of potential outcomes and increasing intra-day volatility. Given this prevailing environment and the uncertainty of how long it may persist, INPRS raised liquid cash balances in March 2020 and maintained them the remainder of the fiscal year. We believed this was an important step to ensure the portfolio always had enough cash to make retirement payments over the next three months, regardless of what happened in markets, and to ensure the portfolio could adequately be rebalanced, if necessary.

As you can see from the chart above, INPRS also has meaningful exposure to less liquid asset classes with 28 percent allocated across private markets, real estate, and absolute return. We believe each of these asset classes serves a unique purpose within the construct of the allocation. However, with these benefits come other risks, namely a lack of liquidity (e.g. Many of these private market funds have a lock-up of ten years or longer, and many of the absolute return funds only allow for quarterly liquidity).

Regardless of how good we think these exposures are, we want to ensure the portfolio has enough liquidity to meet retirement payments as they come due without unnecessary fire-selling of assets in turbulent markets (see the third imperative listed above). As a result, the investment team developed and maintains a liquidity measure that assesses the System's ability to take on illiquidity risk at any point in time. The metric compares the amount of liquid assets and cash inflows available over the next five years to the expected cash outflows (e.g. retirement payments, plan expenses, etc.) over the same time frame. Through strenuous stress testing, the investment staff is comfortable that there is adequate liquidity in various negative market environments, and as of June 30, 2020, INPRS's liquid assets and projected inflows are 2.7 times the projected outflows over the next five years.

INPRS's Defined Contribution Investment Imperatives

Known as the Annuity Savings Account ("ASA"), My Choice: Retirement Savings Plan ("My Choice"), and Legislators' Defined Contribution Plan, the defined contribution plans at INPRS provide members the ability to select their own asset allocation from a line-up of investment options approved by the Board. Established in fiscal year 2017, three long-term imperatives that are vital to the continued health of the System's defined contribution plans have served as the guide for the investment team.

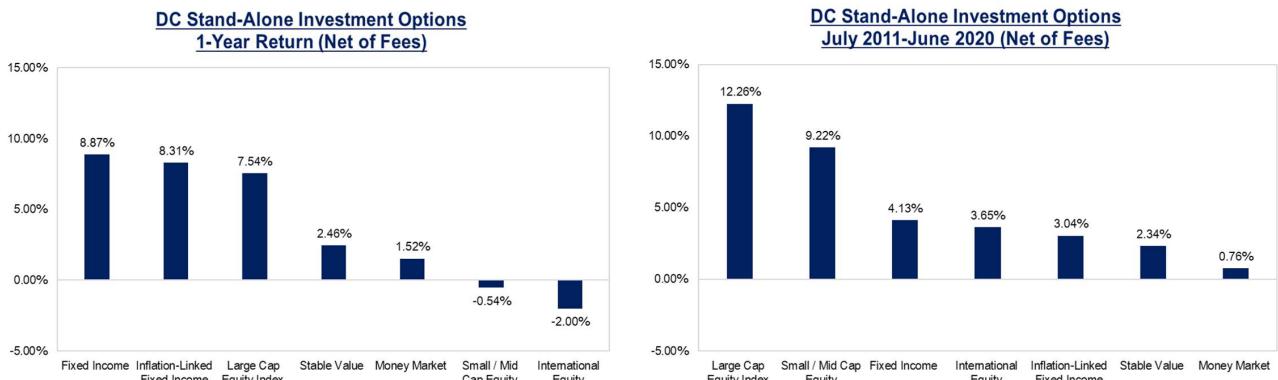
- 1) **Provide a simple and diversified default option ("Allocate it for me" – Target Date Options).** Effective fiscal year 2011, INPRS's Board changed the default investment option for the ASA and My Choice plans to target date funds. This fund line-up was established to provide members with an auto-pilot allocation that targets an appropriate risk and return profile for their particular time horizon and automatically becomes more conservative as they approach retirement. Given how many members rely on INPRS to manage their asset allocation for them by defaulting to this option, it is crucial that we construct a target date fund line-up that is easy to understand yet sophisticated enough to help members achieve their savings goals.
- 2) **Provide a simple and diversified menu of stand-alone options ("Allocate it myself" – Core and Specialty Options).** For those members that want to select an allocation that is different than those offered in the target date funds, INPRS offers investment options for individual asset classes. This line-up of options allows members to construct an asset allocation that better suits their specific needs and objectives.
- 3) **Leverage the defined benefit asset base to provide low cost investment options.** One reason the multiple retirement plans under INPRS's management were originally consolidated was to reduce fees for all plans. As a result, it is critical that we maintain focus on utilizing the large asset base across the defined benefit and defined contribution plans to continually drive costs lower.

Performance Attribution

The defined contribution line-up is constructed using the basic building blocks of an asset allocation, including various equity and fixed income portfolios. As such, INPRS's investment options were influenced by the same forces mentioned in the defined benefit section above. A dramatic slowdown in growth caused by the pandemic hurt all equity-related investment options. However, the Large Cap Equity index managed to produce a positive 7.5% return, as the U.S. government provided more fiscal stimulus to support the economy and markets than most other countries. At the same time, the historic move lower in interest rates provided enough support for the Fixed Income and Inflation-Linked Fixed Income Funds that they were the top performers over the course of fiscal year 2020. Over a longer time period going back to July 2011, each stand-alone investment option has generated strong performance (right chart below). As expected, the higher-risk equity options have been the best performers while the fixed income related options have provided steady, positive returns.

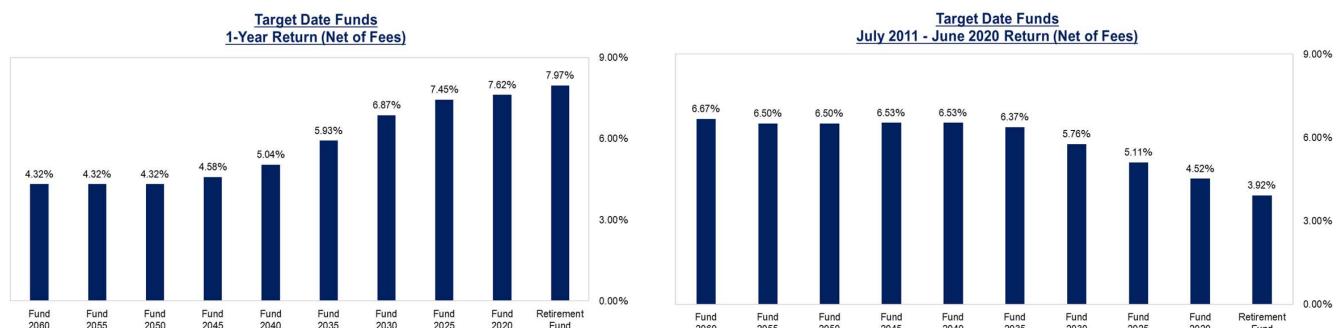
Report from the Chief Investment Officer, continued

Defined Contribution Investment Option Returns as of June 30, 2020



Given INPRS's target date funds are constructed using different mixes of the INPRS stand-alone investment options, their returns are merely an amalgamation of the returns shown above. The funds closer to retirement had stronger performance in fiscal year 2020 as they have a fixed income bias and fixed income options were the top performers. While, over a longer time period, the funds farther from retirement have had higher returns due to their equity bias. The following charts illustrate these performance differences since the target date funds became INPRS's default investment option in 2011.

Defined Contribution Target Date Fund Returns as of June 30, 2020

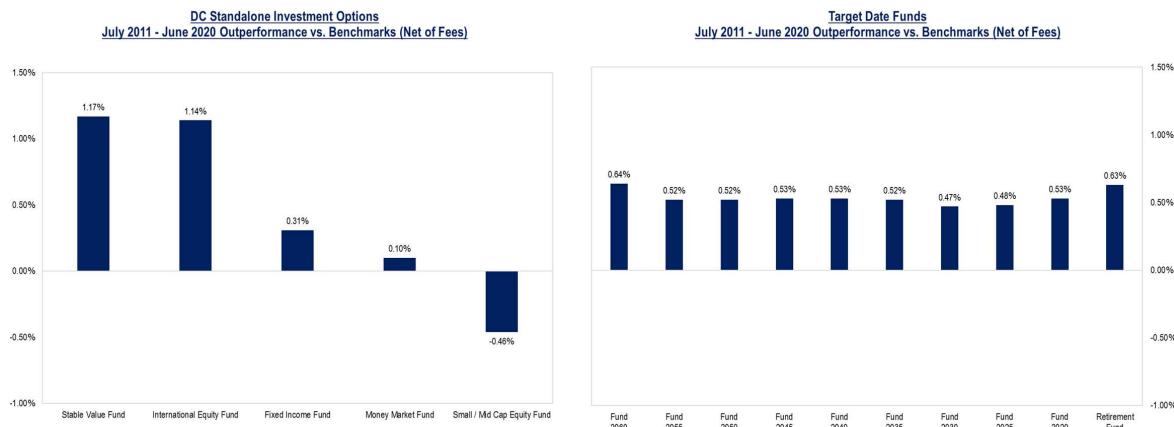


By including a moderate amount of active management within the fund line-up, the investment team was able to beat the benchmarks in four out of five of the stand-alone investment options with an active management component⁵ over the past eight years by 0.12 to 1.15 percent annually, depending on the fund. The Small/Mid Cap Equity Fund had underperformance of 0.46 percent annually over this time frame due to an overweight to small cap equities, which have underperformed mid cap equities over this period. Given that the target date funds are constructed using the INPRS stand-alone investment options, this also translated into outperformance across the target date fund glide path of 0.47 to 0.64 percent over the past nine years.

⁵ The following DC investment options are only passively managed: Large Cap Equity Index Fund and Inflation-Linked Fixed Income Fund.

Report from the Chief Investment Officer, continued

Defined Contribution Annualized Performance Relative to Benchmarks as of June 30, 2020



No Crystal Ball to Be Found

If there has ever been a year to serve as the decisive evidence that it is extremely difficult to predict what is going to happen in economies and markets, fiscal year 2020 was it. At INPRS, we have continued to use this view as a staple in our long-term philosophy on how we were going to approach investing. While it is difficult to admit that we do not have the ability to predict market outcomes, we believe over-confidence in one's predictive abilities can give a false sense of security and can do far more damage than a strategic and diversified approach long-term. This does not mean we turn a blind-eye to what is going on in real-time and passively invest. Instead, it is quite the opposite. Our team is working diligently to re-evaluate economic and market linkages in real-time to build a better asset allocation in the defined benefit portfolio and better investment line-up in the defined contribution platform going forward. The team is also spending countless hours sourcing, deliberating, and deciding on which investment managers will be the best fit to execute within these portfolios. I am confident that, while economies and markets continue to provide surprise events, our team's dedication to doing what's best for our members long-term will be unwavering and will set-up our plan for continued success for years to come.

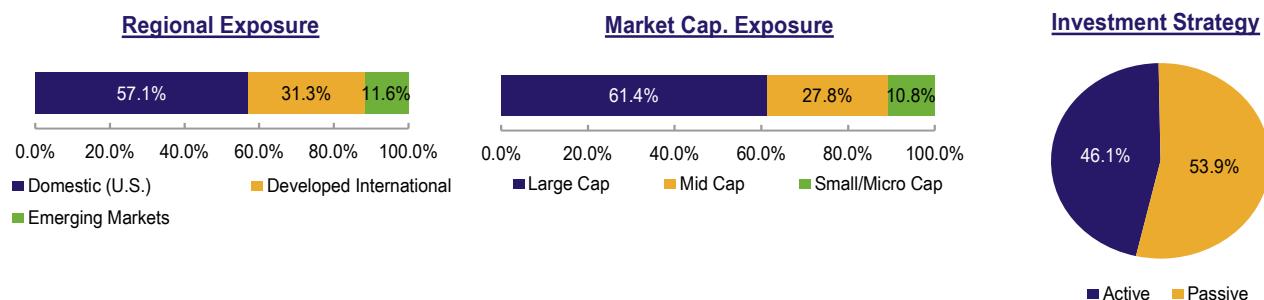
Sincerely,

Scott B. Davis, CFA
Chief Investment Officer

Asset Class Summaries

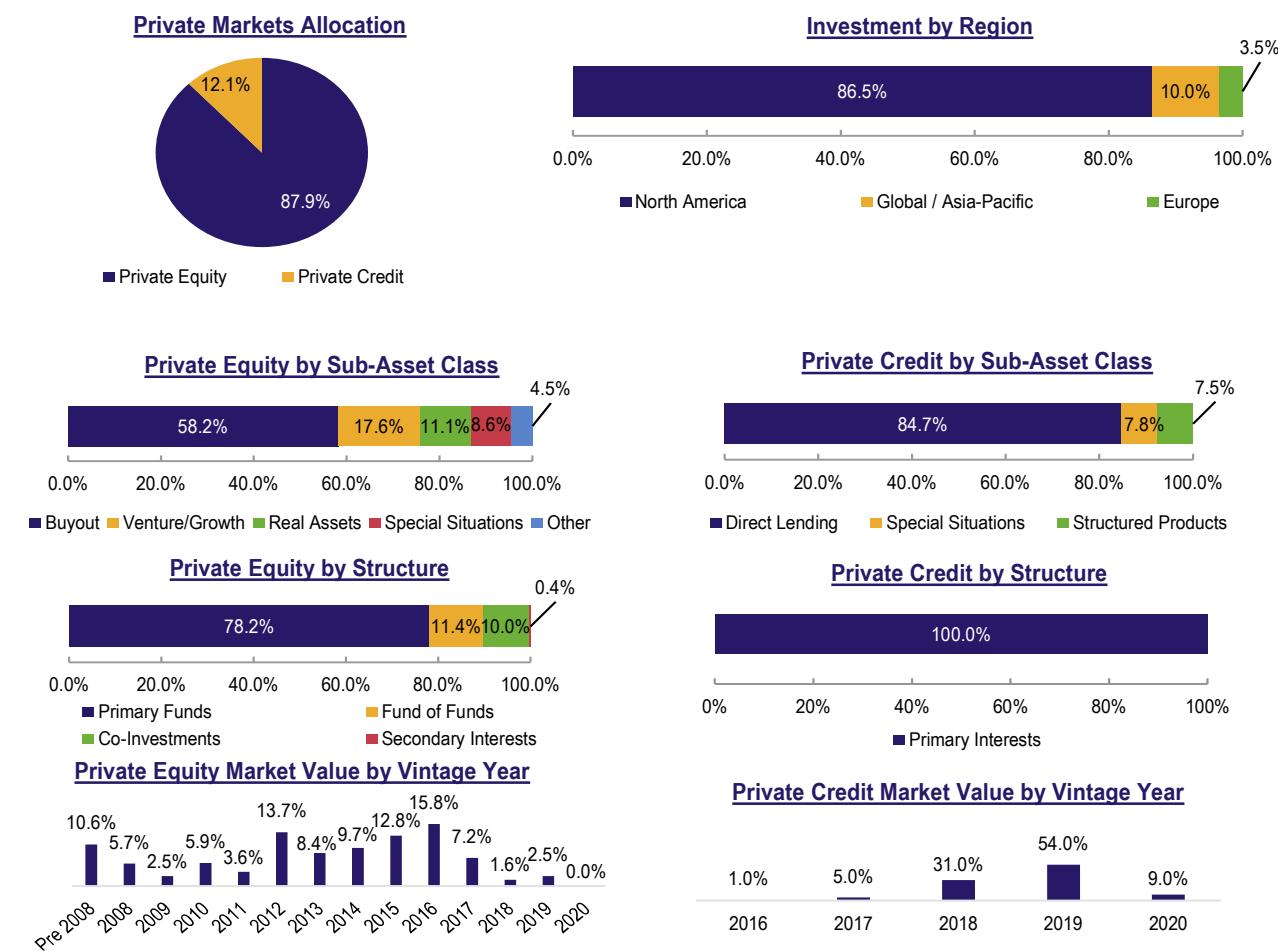
Public Equity¹

The public equity portfolio seeks to provide long-term capital appreciation and income through exposure to public equity securities. INPRS uses a variety of external managers to create a globally diversified portfolio within the asset class. Historically, public equities have performed well in environments when actual economic growth came in higher than expectations and/or when actual inflation came in lower than expectations.



Private Markets²

The private markets portfolio, which includes private equity and private credit, seeks to provide risk-adjusted returns in excess of public markets while simultaneously decreasing the volatility of the investment portfolio through diversification.



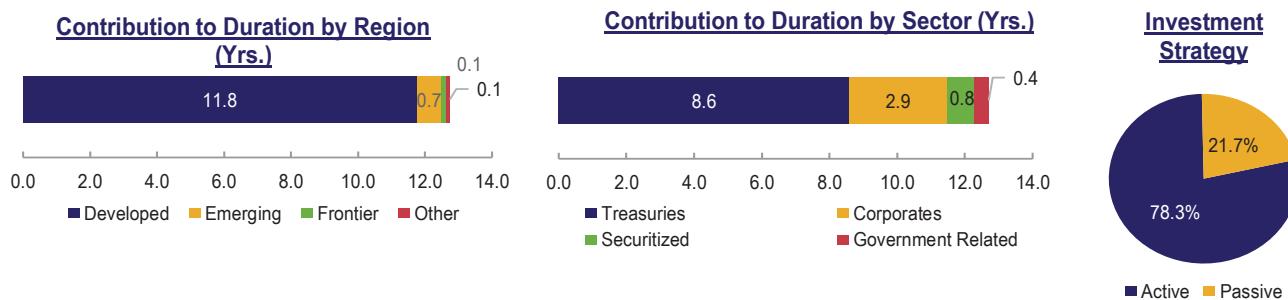
1 Portfolio data as of 06/30/2020 provided by BNY Mellon, INPRS's Custodian

2 Portfolio data as of 03/31/2020 provided by Aksia Torrey Cove, INPRS's Private Markets consultant

Asset Class Summaries, continued

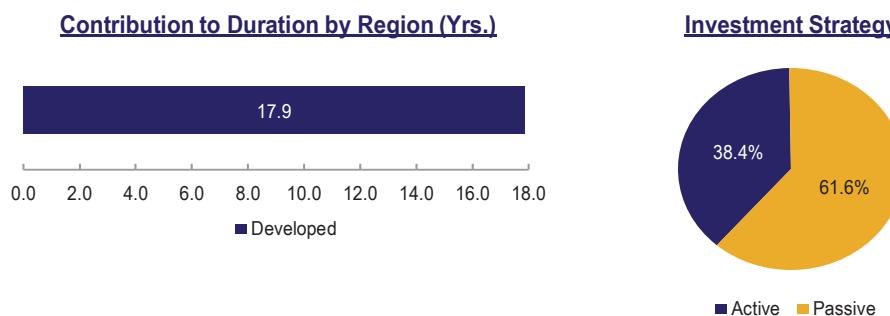
Fixed Income (ex Inflation Linked)³

The fixed income - ex inflation-linked portfolio seeks to generate current income and long-term risk-adjusted return, in excess of the custom benchmark ("Benchmark"), through the investment in debt securities. A focus is placed on preservation of capital. To minimize the probability of substantial principal loss, INPRS staff seeks to reduce the volatility of the portfolio and enhance return from both contractual income and capital appreciation--in part, by investing in certain actively managed strategies.



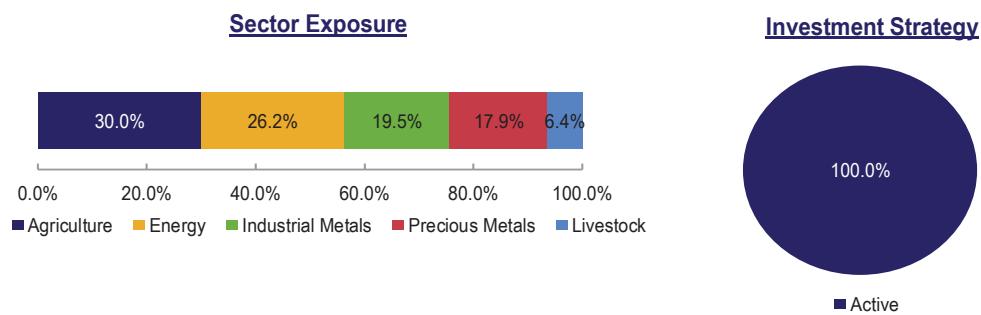
Fixed Income (Inflation-Linked)³

The fixed income - inflation-linked portfolio seeks, primarily via passive management, to generate a long-term risk-adjusted return similar to that of the custom global inflation index ("Benchmark") and to, more broadly, provide protection against unanticipated inflation.



Commodities⁴

The purpose of the commodity portfolio is to enhance long-term risk-adjusted returns by preserving investment capital and lowering overall volatility. The portfolio should also act as a hedge against unanticipated inflation. Commodity investments have historically delivered returns that are less correlated with equity and fixed income markets which may provide an opportunity to enhance returns and/or reduce volatility.



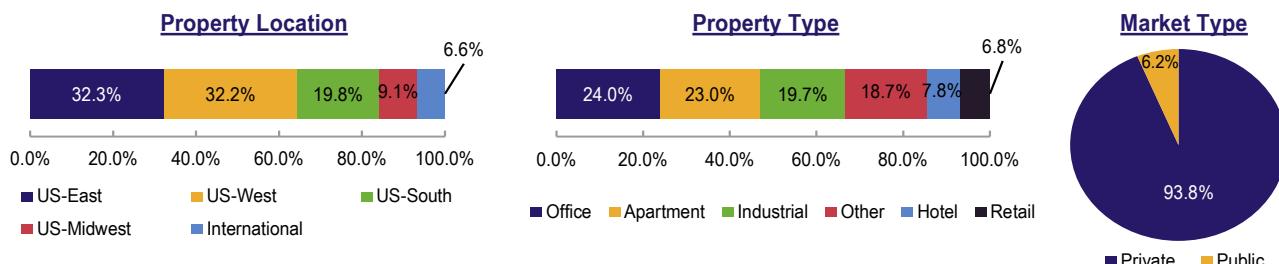
³ Portfolio data as of 06/30/2020 provided by MSCI Barra One and BNY Mellon, INPRS's Custodian

⁴ Portfolio data as of 06/30/2020 provided by portfolio managers

Asset Class Summaries, continued

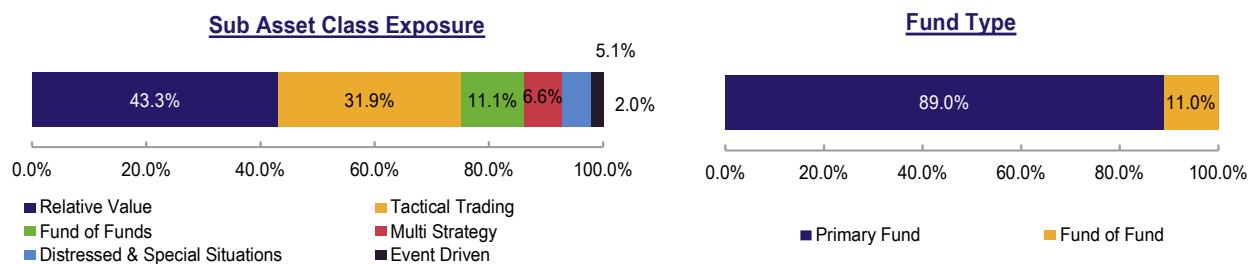
Real Estate⁵

The real estate portfolio is mostly comprised of investments in private real estate partnerships, and the underlying exposures are a mix of debt and equity holdings. The portfolio seeks to generate attractive risk-adjusted returns by providing stable current income and preserving investment capital. The portfolio should also reduce volatility by providing a hedge against inflation and through the diversification benefits provided by real estate investments.



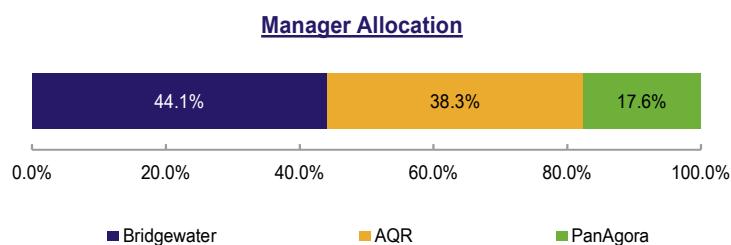
Absolute Return⁶

The purpose of the absolute return strategies program is to enhance the long-term risk adjusted returns of the plan by delivering alpha, providing diversification benefits, and preserving capital. Absolute return strategies generate returns by exploiting mispricing and inefficiencies in global capital markets, while attempting to reduce exposures to primary market factors (e.g. interest rates and equities) through various hedging techniques.



Risk Parity⁷

The risk parity portfolio seeks to deliver consistent and high risk-adjusted rates of returns as a standalone investment through the allocation of capital that equalizes risks across a myriad of macroeconomic environments. While traditional asset allocation is highly dependent on favorable equity returns, risk parity can be considered an “all weather” portfolio to garner consistent, high returns from multiple asset classes without long-term inclination towards any single asset class.



5 Portfolio data provided by Mercer, INPRS's Real Estate consultant

6 Portfolio data provided by Aksia, INPRS's Absolute Return consultant

7 Portfolio data proved by BNY Mellon, INPRS's Custodian

Outline of Investment Policies

Objective and Guiding Principles

The Indiana Public Retirement System's (INPRS) Board serves as the ultimate fiduciary of INPRS. The Board establishes investment policies while the State of Indiana enacts guidelines on the investment of the System's assets. At all times, INPRS must invest its assets according to the "Prudent Investor" standard.

The Investment Policy Statement (IPS) ensures that INPRS will maintain funding for each retirement fund to pay the benefits or actuarially determined liabilities over time in a cost-effective manner. It is a dynamic document and periodic reviews are undertaken. The Investment Policy Statement was last revised on June 28, 2019.

Core tenets of the IPS are:

- Set investment policies that the Board judges to be appropriate and prudent.
- Develop clear, distinctive roles and responsibilities of the Board, staff and each service provider.
- Serve as a guide for continual oversight of the invested assets.
- Establish formal criteria to measure, monitor and evaluate the performance results of the investment managers.
- Communicate investment policies, directives and performance criteria to the external and internal stakeholders.

Consolidate Defined Benefit Assets Objectives and Structure

The Board recognizes that the allocation of defined benefit assets is the most important factor of investment returns over long periods of time. An asset liability study is conducted every five years to analyze the expected returns of various global asset classes, projected liabilities, risks associated with alternative asset mix strategies and their effect on the projected fair value of assets, funded status and contributions to the funds. With a long-term investment focus, the defined benefit portfolio is invested across diverse asset classes as shown and is periodically reviewed by the Board:

Defined Benefit Asset Allocation:	Target Allocation	Target Range
Public Equity	22.0 %	19.5 to 24.5 %
Private Markets	14.0	10.0 to 18.0
Fixed Income - Ex Inflation-Linked	20.0	17.0 to 23.0
Fixed Income - Inflation-Linked	7.0	4.0 to 10.0
Commodities	8.0	6.0 to 10.0
Real Estate	7.0	3.5 to 10.5
Absolute Return	10.0	6.0 to 14.0
Risk Parity	12.0	7.0 to 17.0

Defined Contribution Assets Objectives and Structure

The defined contribution plans are structured to provide members with a choice of diverse investment options that offer a range of risk and return characteristics appropriate for members. Members can self-direct their investment options or leave their contributions invested in the default target date retirement fund. The investment options undergo periodic reviews by the Board. The defined contribution investments are outlined in the section Investment Results - Defined Contribution Assets. In addition, Fund Facts are available online at: <https://www.in.gov/inprs/fundfactsheets.htm>

Other Funds

Other plans under the administration of the Board include the Special Death Benefit Fund (SDBF), Retirement Medical Benefits Account Plan (RMBA) and Local Public Safety Pension Relief Fund (LPSPR). The assets of SDBF and RMBA are invested in intermediate U.S. government and U.S. credit bonds. The assets of LPSPR are invested in short-term money market instruments, including but not limited to, commercial paper and securities issued or guaranteed by the U.S. government.

Notes to the Investment Schedules

Accompanying Notes to the Actual and Benchmark Returns

- Returns are time-weighted based on calculations made by the System's custodian, Bank of New York Mellon.
- Returns are net of fees. Prior to 2012, returns are presented as previously reported; gross of fees.
- Defined Benefit asset class custom benchmark descriptions are as follows:

Global Asset Class	Benchmark Description
Public Equity	MSCI All Country World Investable Market Net Index
Private Markets	Benchmark comprised of two custom benchmarks for Private Equity and Private Credit. 100% Private Equity from July 2008-September 2017 and 96% Private Equity and 4% Private Credit from October 2017-Present. October 2017 marked the inception of Private Credit. Private Equity Benchmark is comprised of the following components lagged one quarter: 60% Russell 2000 Index, 20% MSCI EAFE Small Cap Index, 15% CS High Yield Index, and 5% Credit Suisse Western European High Yield Index (Hedged) plus 3.00%. Private Credit Benchmark is comprised of the following components lagged one quarter: 50% CS Leverage Loan Index, 33% Wells Fargo BDC Index, and 17% CS Western European Leveraged Loan Index plus 1.50%.
Fixed Income - Ex Inflation-Linked	Benchmark comprised of 25% BB US Long Government, 25% BB Long US Credit, 25% WGBI ex-US 25% Japan Cap (USD Hedged), 7.5% JPM GBI EM, 7.5% JPM EMBI, 4.0% CS Leveraged Loan Total Return Index, 2.5% BofA ML US High Yield Total Return Index, 2.5% BofA ML Non-Financial Developed Markets High Yield Constrained Total Return Index, 1.0% CS Western Europe Leveraged Loan Total Return Index.
Fixed Income - Inflation-Linked	Benchmark comprised of 64% ICE BofA ML Treasury Inflation-Linked 15+ years, 36% Custom weighted mix of country indices within the Barclays Capital World Government Inflation-Linked Bond Index, 100% Hedged to USD (Country weights: 40% US, 30% Euroland, 15% UK, 10% Canada, 5% Sweden).
Commodities	Benchmark comprised of 50% Bloomberg Commodity Index / 50% Goldman Sachs Commodity Index and 75% Global Inflation Linked Bonds (ILB's) collateral component.
Real Estate	Benchmark comprised of Real Estate Custom PME made up of the following components lagged one quarter: 70% FTSE NAREIT All Equity REITS and 30% Barclays CMBS.
Absolute Return	Benchmark comprised of the weighted average of INPRS exposure to representative HFRI sub-strategy indices.
Risk Parity	Benchmark comprised of 60% MSCI ACWI IMI Index (equities) and 40% Barclays Global Aggregate Bond Index (bonds).
Cash + Cash Overlay	Benchmark comprised of the allocation to sub-asset class targets for the cash overlay starting in April 2016; prior to that, the 3-month LIBOR was the benchmark for cash.
Consolidated Defined Benefit Assets	The target index weights for each asset class benchmark are set by the target asset allocation. The return for Risk Parity, Real Estate, and Private Markets are equal to the asset class returns and not the benchmark.

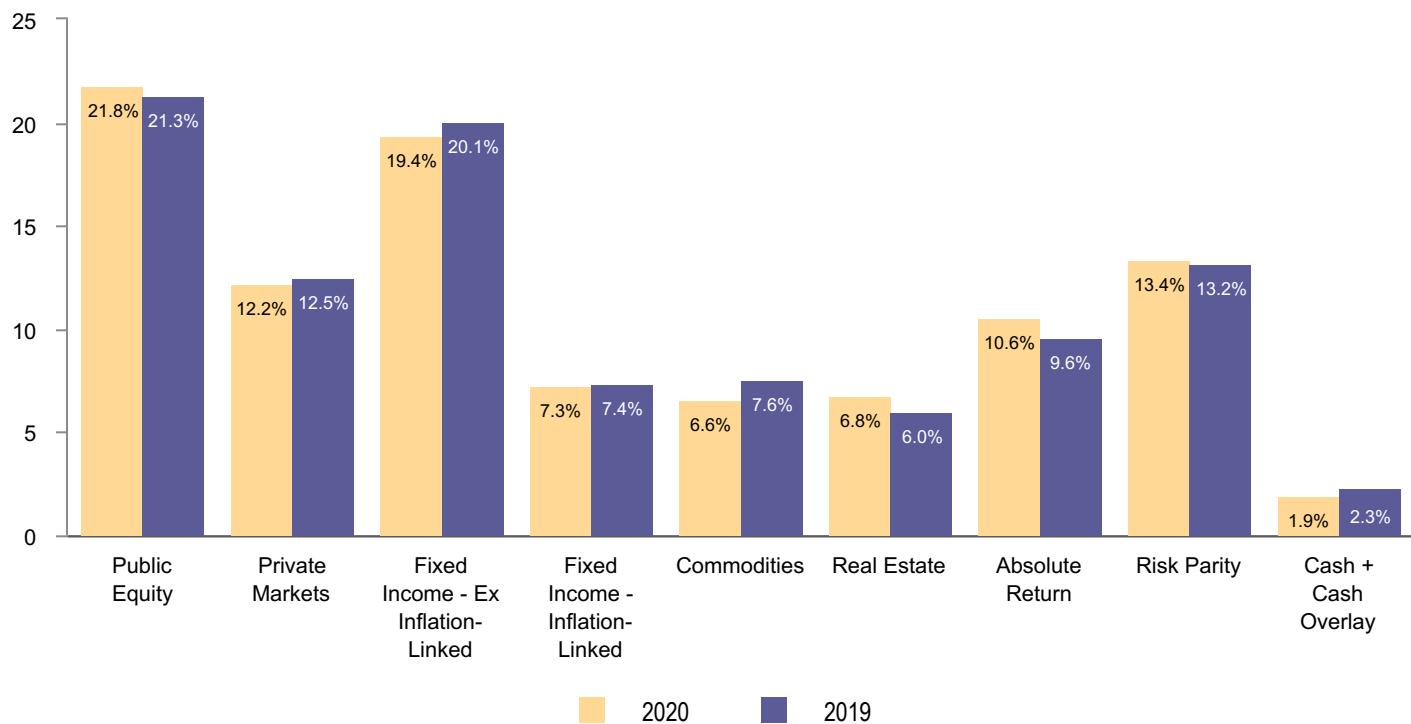
- Defined Contribution Target Date Fund benchmarks are comprised of performance data using a passive strategy with the same asset allocation glide path of each Target Date Fund.
- Defined Contribution Target Date Fund 2065 was added to the investment line-up May 1, 2020. Historical performance is not available.
- Defined Contribution Target Date Fund 2015 was added to the investment line-up July 1, 2019. Historical performance for 3-year and 5-year periods are not available.

Investment Results - Consolidated Defined Benefit Assets

Asset Allocation Summary: June 30, 2020 Actual vs. June 30, 2019 Actual

The Total Consolidated Defined Benefit Investments shown below are grouped by global asset classes approved in the Investment Policy Statement, whereas the investments in the Statement of Fiduciary Net Position are grouped in assets and liabilities according to GASB and the security type assigned to each investment.

(dollars in thousands)	June 30, 2020			Allowable Range for Investments	June 30, 2019		
	Global Asset Class	Amount	Percent		Amount	Percent	
Public Equity		\$ 6,698,898	21.8 %	22.0%	19.5 to 24.5 %	\$ 6,480,676	21.3 %
Private Markets		3,736,344	12.2	14.0	10.0 to 18.0	3,788,124	12.5
Fixed Income - Ex Inflation-Linked		5,941,606	19.4	20.0	17.0 to 23.0	6,116,645	20.1
Fixed Income - Inflation-Linked		2,233,102	7.3	7.0	4.0 to 10.0	2,241,789	7.4
Commodities		2,026,221	6.6	8.0	6.0 to 10.0	2,304,769	7.6
Real Estate		2,096,536	6.8	7.0	3.5 to 10.5	1,823,022	6.0
Absolute Return		3,240,716	10.6	10.0	6.0 to 14.0	2,905,873	9.6
Risk Parity		4,115,539	13.4	12.0	7.0 to 17.0	3,998,139	13.2
Cash + Cash Overlay		568,869	1.9	N/A		711,537	2.3
Total Consolidated Defined Benefit Assets		\$ 30,657,831	100.0 %	100.0 %		\$ 30,370,574	100.0 %



Investment Results - Consolidated Defined Benefit Assets, continued

Time-Weighted Rate of Return by Asset Class vs. Benchmark Returns ¹

For the Year Ended June 30, 2020

Global Asset Class	Actual Return	Benchmark Return	Actual Over / (Under) Benchmark
Public Equity	2.7 %	1.2 %	1.5 %
Private Markets	2.3	(17.2)	19.5
Fixed Income - Ex Inflation-Linked	9.6	8.9	0.7
Fixed Income - Inflation-Linked	14.6	16.8	(2.2)
Commodities	(26.8)	(25.0)	(1.8)
Real Estate	2.6	(9.7)	12.3
Absolute Return	0.4	(1.2)	1.6
Risk Parity	3.2	3.7	(0.5)
Cash + Cash Overlay	9.9	4.3	5.6
Total Consolidated Defined Benefit Assets	2.6	2.1	0.5 %

Historical Time-Weighted Investment Rates of Return

For the Years Ended June 30

(dollars in thousands)		Fair Value of Assets	Rate of Return ¹	Target Return
2020	INPRS	\$ 30,657,831	2.6 %	6.75 %
2019	INPRS	30,370,574	7.4	6.75
2018	INPRS	28,475,760	9.3	6.75
2017	INPRS	26,364,510	8.0	6.75
2016	INPRS	24,775,551	1.2	6.75
2015	INPRS	24,629,820	—	6.75
2014	INPRS	24,560,323	13.7	6.75
2013	INPRS	21,488,715	6.0	6.75
2012	INPRS	19,708,900	0.7	7.00
2011	PERF CRIF ²	15,796,600	20.1	7.00
	TRF DB Assets ³	5,984,000	18.2	7.00

¹ See Accompanying Notes to the Actual and Benchmark Returns.

² PERF Consolidated Retirement Investment Fund (CRIF).

³ TRF Defined Benefit Assets

Investment Results - Consolidated Defined Benefit Assets, continued

Time-Weighted Rates of Return by Asset Class vs Benchmark Returns ¹

As of June 30, 2020

Global Asset Class	1-Year	Annualized	
		3-Years	5-Years
Public Equity	2.7 %	6.5 %	7.0 %
Benchmark	1.2	5.6	6.1
Private Markets	2.3	12.6	11.5
Benchmark	(17.2)	(0.6)	3.3
Fixed Income - Ex Inflation - Linked	9.6	6.9	6.3
Benchmark	8.9	6.5	6.0
Fixed Income - Inflation - Linked	14.6	8.6	6.2
Benchmark	16.8	9.2	6.6
Commodities	(26.8)	(6.4)	(9.3)
Benchmark	(25.0)	(6.4)	(9.1)
Real Estate	2.6	7.7	8.3
Benchmark	(9.7)	1.5	2.6
Absolute Return	0.4	3.3	2.9
Benchmark	(1.2)	1.4	1.5
Risk Parity	3.2	6.6	5.2
Benchmark	3.7	5.7	5.7
Cash + Cash Overlay	9.9	8.2	7.1
Benchmark	4.3	6.4	6.0
Consolidated Defined Benefit Assets	2.6	6.4	5.6
Target Index	2.1	5.8	5.1

¹ See Accompanying Notes to the Actual and Benchmark Returns.

Investment Results - Consolidated Defined Benefit Assets, continued

Statistical Performance

As of June 30, 2020

Statistic	1-Year	Annualized		
		3-Years	5-Years	10-Years
Time-Weighted Rate of Return	2.6 %	6.4 %	5.6 %	6.7 %
Standard Deviation	8.7	6.5	5.8	6.0
Sharpe Ratio ¹	0.2	0.7	0.8	1.0
Beta ²	0.4	0.4	0.3	0.4
Correlation ²	0.9	0.9	0.9	0.9
Alpha ³	0.4	0.5	0.5	0.3

¹ Risk Free Proxy is the Citigroup 3 Month T-Bill.

² Market Proxy is the S&P 500.

³ Market Proxy is INPRS's Target Index. The 10-year benchmark only measured manager selection decisions prior to July 1, 2012. The index changed in 2012 to reflect both tactical asset allocation and manager selection decisions.

Definition of Key Terms:

Standard Deviation: A statistic used to measure the dispersion in a distribution. Dispersion is measured relative to the mean, or average of the distribution. The greater the dispersion, the higher the risk associated with the pattern of observations. One standard deviation describes two-thirds of the observations in a normal or bell-shaped distribution. In an asset allocation context, standard deviation is a conventional proxy for risk or volatility.

Sharpe Ratio: Ratio used to measure risk-adjusted performance. The Sharpe Ratio is calculated by subtracting a risk-free rate (proxy) from the rate of return for a portfolio and dividing the result by the standard deviation of the portfolio returns. The Sharpe Ratio provides insight on excess risk held in the portfolio. The greater a portfolio's Sharpe Ratio, the better its risk-adjusted performance has been. A negative Sharpe Ratio indicates that a risk-less asset would perform better than the security being analyzed.

Beta: A measure of the volatility, or systematic risk, of a security or portfolio in comparison to the market as a whole. Beta is the tendency of a security's return to respond to swings in the market. A Beta of less than one indicates less volatility than the market. A Beta of greater than one indicates greater volatility than the market.

Correlation: A statistical measure of how two securities move in relation to each other. A correlation of positive 1.0 indicates similar magnitude and direction of change. A correlation of negative (1.0) indicates similar magnitude, but opposite direction. A correlation of zero indicates the relationship is purely random.

Alpha: A measure of relative performance. Alpha is the difference between the actual performance of the assets and the performance which should have been achieved given the market's performance and the asset's risk posture.

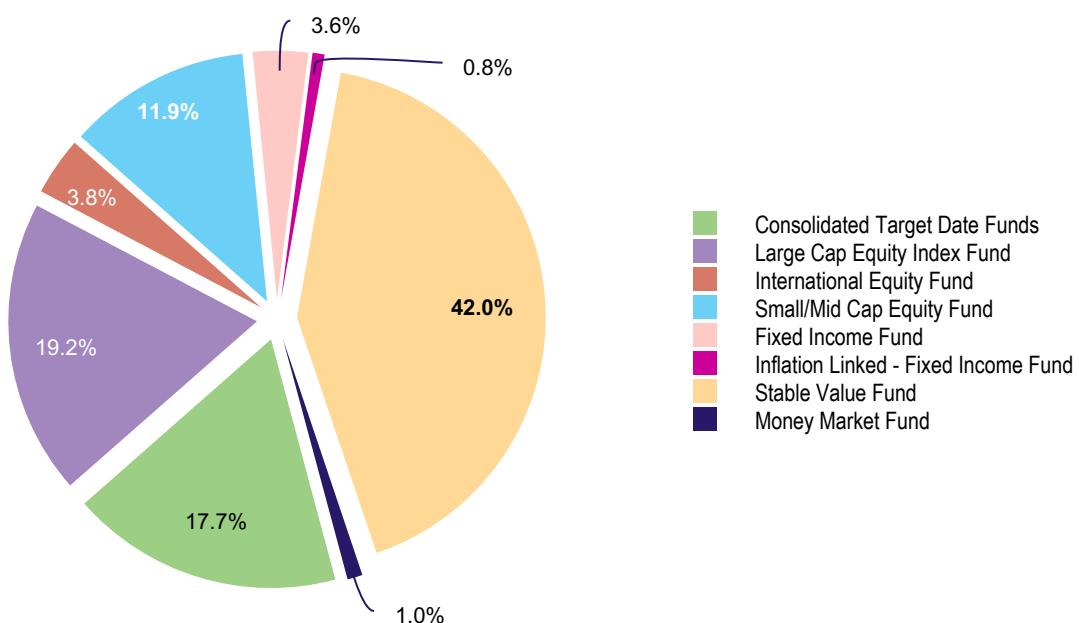
Investment Results - Consolidated Defined Contribution Assets

Assets by Investment Option

As of June 30, 2020

The Total Consolidated Defined Contribution Investments shown below are grouped by asset classes approved in the Investment Policy Statement, whereas the investments in the Statement of Fiduciary Net Position are grouped in assets and liabilities according to GASB and the security type assigned to each investment.

Investment Option	Plan Assets	Percent of Total Self-Directed Investments
Consolidated Target Date Funds	\$ 1,032,864	17.7 %
Large Cap Equity Index Fund	1,120,573	19.2
International Equity Fund	223,534	3.8
Small/Mid Cap Equity Fund	693,232	11.9
Fixed Income Fund	208,641	3.6
Inflation Linked - Fixed Income Fund	43,224	0.8
Stable Value Fund	2,446,932	42.0
Money Market Fund	59,852	1.0
Total Defined Contribution Assets	\$ 5,828,852	100.0 %



Investment Results - Consolidated Defined Contribution Assets, continued

Time-Weighted Rate of Return by Investment Option vs. Benchmark Returns ¹

For the Year Ended June 30, 2020

Investment Option	Annualized		
	1-Year	3-Year	5-Year
Target Date Funds:¹			
Fund 2065 ¹	n/a	n/a	n/a
2065 Fund Index	2.3 %	5.8 %	6.1 %
Fund 2060	4.3	6.2	6.3
2060 Fund Index	2.7	5.5	5.6
Fund 2055	4.3	6.2	6.2
2055 Fund Index	2.7	5.5	5.6
Fund 2050	4.3	6.2	6.2
2050 Fund Index	2.7	5.5	5.6
Fund 2045	4.6	6.3	6.3
2045 Fund Index	2.9	5.6	5.6
Fund 2040	5.0	6.4	6.3
2040 Fund Index	3.3	5.7	5.6
Fund 2035	5.9	6.4	6.1
2035 Fund Index	4.1	5.7	5.4
Fund 2030	6.9	6.1	5.6
2030 Fund Index	5.1	5.4	5.0
Fund 2025	7.5	5.7	5.0
2025 Fund Index	5.7	5.0	4.5
Fund 2020	7.6	5.3	4.5
2020 Fund Index	6.0	4.7	4.0
Fund 2015 ¹	7.8	n/a	n/a
2015 Fund Index	6.5	4.7	3.7
Retirement Fund	8.0	5.2	4.2
Retirement Fund Index	6.9	4.8	3.8
All Other Funds:			
Large Cap Equity Index Fund	7.5	10.7	10.7
S&P 500 Index	7.5	10.7	10.7
International Equity Fund	(2.0)	2.6	3.7
MSCI ACWI ex US Index	(4.7)	1.1	2.2
Small/Mid Cap Equity Fund	(0.5)	6.0	6.6
Russell Small Cap Completeness Index	0.9	6.5	6.9
Fixed Income Fund	8.9	5.4	4.5
Barclays U.S. Aggregate Bond Index	8.7	5.3	4.3
Inflation - Linked Fixed Income Fund	8.3	5.1	3.7
Barclays U.S. TIPS Index	8.3	5.1	3.8
Stable Value Fund	2.5	2.3	2.0
Federal Reserve 3 Yr Constant Maturity	1.1	1.9	1.6
Money Market Fund	1.5	1.8	1.3
Citigroup 3 Month T-Bill Index	1.6	1.7	1.2

¹ See Accompanying Notes to the Actual and Benchmark Returns.

Investment Results - Consolidated Defined Contribution Assets, continued

Historical Annual Interest Crediting Rates

For the Years Ended June 30

Interest crediting rates are used to calculate a return on contributions made by members who are exiting the fund prior to attaining eligibility for a pension benefit payment. Interest rates are approved by the Board on an annual basis.

	Annual Interest Crediting Rate			
	77 Fund	JRS	EG&C	PARF
2020	2.6 %	2.6 %	2.6 %	2.6 %
2019	2.8	2.8	2.8	2.8
2018	2.4	2.4	2.4	2.4
2017	1.8	1.8	1.8	1.8
2016	1.9	1.9	1.9	1.9
2015	2.7	2.7	2.7	2.7
2014	1.9	1.9	1.9	1.9
2013	5.5	—	0.3	5.5
2012	5.5	—	3.5	5.5
2011	5.5	—	3.5	5.5

Top 10 Holdings

For the Year Ended June 30, 2020

Equity Holdings by Fair Value ¹

(dollars in thousands)

Company	Shares	Fair Value
Microsoft Corporation	902,564	\$ 183,681
Apple Inc.	488,130	178,070
Amazon.com Inc.	50,382	138,995
Facebook Inc.	285,314	64,786
Alphabet Inc. Class A Common Stock	36,093	51,182
Taiwan Semiconductor Manufacturing	4,807,000	50,995
Alphabet Inc. Class C Capital Stock	35,208	49,770
Samsung Electronics Co. Ltd.	1,082,274	47,507
Tencent Holdings Ltd.	716,800	46,113
SAP SE	328,969	45,934

Fixed Income Holdings by Fair Value ¹

(dollars in thousands)

Description	Coupon Rate	Maturity Date	Par Value	Fair Value
U.S. Treasury - CPI Inflation Index Bond	2.125 %	2/15/41	\$ 133,551	\$ 199,440
U.S. Treasury Bond	1.250	5/15/50	197,100	189,378
U.S. Treasury Bond	3.125	8/15/44	129,920	177,153
U.S. Treasury - CPI Inflation Index Bond	1.375	2/15/44	120,433	164,357
U.S. Treasury - CPI Inflation Index Bond	0.750	2/15/42	125,087	149,672
U.S. Treasury - CPI Inflation Index Bond	0.625	2/15/43	124,961	146,951
U.S. Treasury - CPI Inflation Index Bond	0.750	2/15/45	119,080	145,683
U.S. Treasury - CPI Inflation Index Bond	0.875	2/15/47	106,443	135,593
U.S. Treasury - CPI Inflation Index Bond	1.000	2/15/46	104,643	135,532
U.S. Treasury - CPI Inflation Index Bond	2.125	2/15/40	85,605	126,224

¹ A complete list of portfolio holdings is available upon request.

Investment Fees

Investment Management Fees

For the Year Ended June 30, 2020

Private Markets and Real Estate managers provide account valuations on a net of fee basis. While management fees are disclosed in the Investment Management Fees schedule, for greater transparency, INPRS makes a good faith effort to provide realized carried interest and expenses that would not otherwise be disclosed. INPRS's consultants Aksia Torrey Cove and Mercer provided additional fee information on a calendar year basis as of December 31, 2019 resulting in reported realized carried interest and expenses for Private Markets of \$76.6 million and Real Estate of \$18.7 million. Reported realized carried interest and expenses exclude funds where data was not provided by the general partners.

(dollars in thousands)

Asset Class	Fees Paid	
Consolidated Defined Benefit Assets		
Public Equity	\$	16,290
Private Markets		41,939
Fixed Income - Ex Inflation-Linked		23,607
Fixed Income - Inflation-Linked		3,333
Commodities		5,824
Real Estate		20,588
Absolute Return		77,779
Risk Parity		10,870
Cash + Cash Overlay		377
Total Consolidated Defined Benefit Assets		200,607
Defined Contribution Assets		9,027
OPEB Assets		39
Total Investment Management Fees	\$	209,673

Top 10 Brokers' Commission Fees

For the Year Ended June 30, 2020

(dollars in thousands)

Broker	Fees Paid	
Morgan Stanley & Co. Inc.	\$	1,064
Goldman Sachs & Co.		692
Newedge USA LLC		639
J P Morgan Securities Ltd.		215
Instinet Clearing Services Inc.		128
HSBC Securities Inc.		125
Sanford C Bernstein & Co. Inc.		117
Merrill Lynch International Equities		86
Jefferies & Co. Inc.		67
Royal Bank of Canada Europe Ltd.		67
Top Ten Brokers' Commission Fees		3,200
Other Brokers		1,926
Total Brokers' Commission Fees	\$	5,126

Investment Professionals

As of June 30, 2020

Consolidated Defined Benefit Assets

Custodian

Bank of New York Mellon

Consultants

Aksia (Absolute Return)
Aksia Torrey Cove (Private Equity and Private Credit)
Mercer (Real Estate)
Verus (General: Defined Benefit)

Black Diamond Capital Management
BlackFin Capital Partners
Blackstone Group
Bregal Sagemount
Brentwood Associates
Butterfly Equity Partners
Caltius Capital Management
Cardinal Partners
Carlyle Group
Centerfield Capital Partners
Cerberus Capital Management
Charterhouse Capital Partners
CID Capital
Cinven
Collier Capital
Columbia Capital
Crescent Capital Group
Crestview Partners
CVC Capital Partners
Doll Capital Management (DCM)
Elevation Partners
EnCap Investments
Energy Capital Partners
Escalate Capital Partners
Falcon Investment Advisors
First Reserve Corporation
Forbion Capital Partners
Fortress Investment Group
Francisco Partners
Gamut Capital Management
Gilde Buyout Partners
Globespan Capital Partners
GSO Capital Partners
GTCR Golder Rauner
H2 Equity Partners
Hammond Kennedy Whitney & Co
Hellman & Friedman
Herkules Capital
High Road Capital Partners
Horsley Bridge
HPS Investments Partners
Insight Partners
Institutional Venture Partners (IVP)
Intermediate Capital Group (ICG)
JFM Management
Jordan Company (TJC)
Kailai Investments
Khosla Ventures
Kohlberg Kravis Roberts & Co (KKR)
KPS Capital Partners
Landmark Partners
Leonard Green & Partners
Lexington Partners
Lightyear Capital
Lindsay Goldberg
Lion Capital
MBK Partners
Merit Capital Partners
Mill Road Capital
Neuberger Berman
New Enterprise Associates
New Mountain Capital
NGP Energy Capital Management
Oak Hill Advisors
Oak Hill Capital Management
Oak Investment Partners
Oaktree Capital Management
Opus Capital Venture Partners
Panda Power Funds
Parthenon Capital Partners
Pathlight Capital
Peninsula Capital Partners
Permira Advisers
Platinum Equity
Portfolio Advisors
Rho Capital Partners
RJD Partners
SAIF Management
Scale Venture Partners
Silver Cup
Silver Lake Partners
Sixth Street Partners (TSSP)

Public Equity Managers

Altrinsic Global Advisors, LLC
Arrowstreet Capital, LP
Artisan Partners Limited Partnership
Baillie Gifford & Company
BlackRock Institutional Trust
Disciplined Growth Investors
Leading Edge Investment Advisors
RhumblLine Advisers
Schroders
Times Square Capital Management, LLC

Private Markets Managers

A.M. Pappas & Associates
ABRY Partners
Accel-KKR
Accent Equity Partners AB
Actis Capital
Advanced Technology Ventures
Advent International
Aisling Capital
AlpInvest Partners
Apax Partners
Apollo Management
ARCH Venture Partners
Ares Management
Ascribe Capital
Austin Ventures
Bain Capital Partners
Baring Private Equity Asia (BPEA)
Bay Partners
Bertram Capital

Investment Professionals, continued

Solar Capital Partners

Private Markets Managers, continued

StepStone Group

Sumeru Equity Partners

Sun Capital Partners

TA Associates

TCW Capital Partners

Technology Crossover Ventures

Technology Partners

Terra Firma Capital Partners

TowerBrook Financial

TPG Capital

Trilantic Capital Partners

Trinity Ventures

Triton Partners

True Ventures

TSG Consumer Partners

Veritas Capital Management

Veronis Suhler Stevenson (VSS)

Vestar Capital Partners

Vintage Venture Partners

Vision Capital

Vista Equity Partners

Walden Group of Venture Capital Funds

Warburg Pincus

Warwick Energy Investment Group

Waterfall Asset Management

Wayzata Investment Partners

Weston Presidio Capital

White Deer Management

Windjammer

WL Ross & Co.

Xenon Private Equity

York Capital Management

Fixed Income - Ex Inflation-Linked Managers

Goldman Sachs Asset Management, LP

Oak Hill Advisors, LP

Oak Tree Capital Management, LP

Pacific Investment Management Company (PIMCO)

State Street Global Advisors

Stone Harbor Investment Partners LP

Stockbridge Capital Group

TA Realty Associates

Walton Street Capital, LLC

WestRiver Capital, LLC

Fixed Income - Inflation-Linked Managers

Bridgewater Associates, Inc.

Northern Trust Global Investments

Absolute Return Managers

AHL Partners (Man Group)

Aeolus Capital Management

AQR Capital Management

Blackstone Group

Bridgewater Associates, Inc.

Davidson Kempner Capital Management

D.E. Shaw & Co

Eisler Capital

Garda Capital Partners

Hudson Structured Capital Management

King Street Capital Management

Kirkoswald Capital Partners LLP

Mariner Investments Group LLC

Nephila Capital

Oxford Asset Management

Perella Weinberg Partners

Pharo Management

Rokos Global Macro

Tenaron Capital Management

Tilden Park Associates

Two Sigma Advisers

Voloridge

Whitebox

Commodities Managers

Black Rock Institutional Trust¹

CoreCommodity Management

Goldman Sachs Asset Management, LP

Gresham Investment Management, LLC

Northern Trust Global Investments¹

Real Estate Managers

Abacus Capital Group, LLC

Angelo Gordon LP

Asana Partners, LP

BlackRock Financial Management

Blackstone Group

Brigade Capital Management

Carlyle Group

Colony Capital, LLC

Exeter Property Group, LLC

Greenfield Partners, LLC

H/2 Capital Partners

Harrison Street Real Estate Capital, LLC

ICG

JDM Partners

LimeTree Capital Advisors

Kayne Anderson

Lone Star Management Co.

Mack Real Estate Group

Mesa West Capital

Noble Investment Group

Prologis

Related Fund Management LLC

Rockpoint Group LLC

Risk Parity Managers

AQR Capital Management

Bridgewater Associates, Inc.

First Quadrant

PanAgora

Cash Overlay Managers

Russell Investments

¹ Black Rock Institutional Trust and Northern Trust Global Investments manage inflation-linked collateral associated with the commodity mandates.

Investment Professionals, continued

As of June 30, 2020

Defined Contribution Assets and Other Funds

Consultant

Capital Cities, LLC (General: Defined Contribution)

Retirement Medical Benefit Account

State Street Global Advisors

Large Cap Equity Index Fund Managers

BlackRock Institutional Trust

Special Death Benefit Fund Assets

Northern Trust Global Investments

International Equity Fund Managers

Altrinsic Global Advisors, LLC

Arrowstreet Capital, LP

Baillie Gifford & Company

BlackRock Institutional Trust

Local Public Safety Pension Relief Fund Assets

Bank of New York Mellon

Small/Mid Cap Equity Fund Managers

RhumbLine Advisers

Times Square Capital Management, LLC

Fixed Income Fund Managers

Loomis Sayles & Company

Northern Trust Global Investments

Pacific Investment Management Company (PIMCO)

Inflation-Linked Fixed Income Fund Managers

Northern Trust Global Investments

Stable Value Fund

Galliard Capital Management (Fund Advisor)

Income Research + Management (Fund Sub-Advisor)

Jennison Associates (Fund Sub-Advisor)

Dodge & Cox (Fund Sub-Advisor)

TCW (Fund Sub-Advisor)

Money Market Fund Manager

Bank of New York Mellon