

## CREF Accounts, TIAA-CREF Funds - All Share Classes, and TIAA-CREF Life Funds 3 & 5 Year Annualized Tracking Error & Information Ratio for the period ending 6/30/18

### Definitions:

**Excess Return (ER):** a measure of an investment's annualized return in excess of a benchmark.

**Tracking Error (TE):** a measure of the volatility of excess returns relative to a benchmark.

**Information Ratio (IR):** a measure of excess annualized return per unit of risk.

### Disclosures:

#### CREF Bond Market account

Risk statistics that require a 3, 5 or 10-year performance history are calculated using the Account's Class R1 share class for periods prior to the Account's Class R3 inception date. The Account's Class R1 began operations on March 1, 1990. Neither the performance nor the risk statistics for these periods have been restated to reflect the lower expenses of Class R3. If these lower expenses had been reflected, the performance and risk statistic values of Class R3 for these periods would have been higher.

#### CREF Equity Index Account

Risk statistics that require a 3, 5 or 10-year performance history are calculated using the Account's Class R1 share class for periods prior to the Account's Class R3 inception date. The Account's Class R1 began operations on April 29, 1994. Neither the performance nor the risk statistics for these periods have been restated to reflect the lower expenses of Class R3. If these lower expenses had been reflected, the performance and risk statistic values of Class R3 for these periods would have been higher.

#### CREF Global Equities

Risk statistics that require a 3, 5 or 10-year performance history are calculated using the Account's Class R1 share class for periods prior to the Account's Class R3 inception date. The Account's Class R1 began operations on May 1, 1992. Neither the performance nor the risk statistics for these periods have been restated to reflect the lower expenses of Class R3. If these lower expenses had been reflected, the performance and risk statistic values of Class R3 for these periods would have been higher.

#### CREF Growth Account

Risk statistics that require a 3, 5 or 10-year performance history are calculated using the Account's Class R1 share class for periods prior to the Account's Class R3 inception date. The Account's Class R1 began operations on April 29, 1994. Neither the performance nor the risk statistics for these periods have been restated to reflect the lower expenses of Class R3. If these lower expenses had been reflected, the performance and risk statistic values of Class R3 for these periods would have been higher.

#### CREF Inflation-Linked Bond Account

Risk statistics that require a 3, 5 or 10-year performance history are calculated using the Account's Class R1 share class for periods prior to the Account's Class R3 inception date. The Account's Class R1 began operations on May 1, 1997. Neither the performance nor the risk statistics for these periods have been restated to reflect the lower expenses of Class R3. If these lower expenses had been reflected, the performance and risk statistic values of Class R3 for these periods would have been higher.

#### CREF Money Market

Risk statistics that require a 3, 5 or 10-year performance history are calculated using the Account's Class R1 share class for periods prior to the Account's Class R3 inception date. The Account's Class R1 began operations on April 1, 1998. Neither the performance nor the risk statistics for these periods have been restated to reflect the lower expenses of Class R3. If these lower expenses had been reflected, the performance and risk statistic values of Class R3 for these periods would have been higher.

#### CREF Social Choice Account

Risk statistics that require a 3, 5 or 10-year performance history are calculated using the Account's Class R1 share class for periods prior to the Account's Class R3 inception date. The Account's Class R1 began operations on March 1, 1990. Neither the performance nor the risk statistics for these periods have been restated to reflect the lower expenses of Class R3. If these lower expenses had been reflected, the performance and risk statistic values of Class R3 for these periods would have been higher.

#### CREF Stock Account

Risk statistics that require a 3, 5 or 10-year performance history are calculated using the Account's Class R1 share class for periods prior to the Account's Class R3 inception date. The Account's Class R1 began operations on July 31, 1952. Neither the performance nor the risk statistics for these periods have been restated to reflect the lower expenses of Class R3. If these lower expenses had been reflected, the performance and risk statistic values of Class R3 for these periods would have been higher.

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**The ratios provided here do not replace performance data, but are supplemental data intended to help investors analyze performance.**

Performance data for each product showing the standardized 1, 5, 10-year and since inception returns can be found here:  
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## CREF Accounts, TIAA-CREF Funds - All Share Classes, and TIAA-CREF Life Funds 3 & 5 Year Annualized Tracking Error & Information Ratio for the period ending 6/30/2018

All statistics were calculated using net of fees monthly returns using our Funds' and Accounts' official benchmarks.

Fund/Account	Benchmark	3 YR Tracking Error (BP)	3 YR Information Ratio (%)	5 YR Tracking Error (BP)	5 YR Information Ratio (%)
<b>CREF Accounts R1 Class</b>					
CREF Bond Market Account	Bloomberg Barclays Aggregate Bond Index	40	0.13	40	0.09
CREF Equity Index Account	Russell 3000 Index	4	NA	5	NA
CREF Global Equities Account	MSCI AC World Index	139	-0.55	136	-0.16
CREF Growth Account	Russell 1000 Growth Index	167	-0.65	160	0.04
CREF Inflation-Linked Bond Account	Bloomberg Barclays TIPS 1-10 Year Index	42	-1.46	37	-1.44
CREF Social Choice Account	SCA Composite Index	62	-0.55	58	-1.19
CREF Stock Account	CREF Composite Index	69	-1.21	66	-0.75
<b>CREF Accounts R2 Class</b>					
CREF Bond Market Account	Barclays Aggregate Bond Index	40	0.78	40	0.50
CREF Equity Index Account	Russell 3000 Index	3	NA	3	NA
CREF Global Equities Account	MSCI AC World Index	139	-0.36	136	-0.03
CREF Growth Account	Russell 1000 Growth Index	167	-0.49	159	0.15
CREF Inflation-Linked Bond Account	Barclays TIPS 1-10 Year Index	41	-0.85	36	-1.01
CREF Social Choice Account	SCA Composite Index	62	-0.13	58	-0.89
CREF Stock Account	CREF Composite Index	69	-0.82	66	-0.50
<b>CREF Accounts R3 Class</b>					
CREF Bond Market Account	Barclays Aggregate Bond Index	41	0.98	40	0.63
CREF Equity Index Account	Russell 3000 Index	2	NA	3	NA
CREF Global Equities Account	MSCI AC World Index	139	-0.29	136	0.01
CREF Growth Account	Russell 1000 Growth Index	167	-0.44	159	0.18
CREF Inflation-Linked Bond Account	Barclays TIPS 1-10 Year Index	40	-0.65	35	-0.86
CREF Social Choice Account	SCA Composite Index	63	0.01	59	-0.80
CREF Stock Account	CREF Composite Index	69	-0.70	66	-0.42

## CREF Accounts, TIAA-CREF Funds - All Share Classes, and TIAA-CREF Life Funds 3 & 5 Year Annualized Tracking Error & Information Ratio for the period ending 6/30/2018

All statistics were calculated using net of fees monthly returns using our Funds' and Accounts' official benchmarks.

Fund/Account	Benchmark	3 YR Tracking Error (BP)	3 YR Information Ratio (%)	5 YR Tracking Error (BP)	5 YR Information Ratio (%)
<b>Retirement Share Class Funds</b>					
Bond Fund	Bloomberg Barclays Aggregate Bond Index	61	0.76	63	0.80
Bond Index Fund	Bloomberg Barclays Aggregate Bond Index	26	NA	23	NA
Bond Plus Fund	Bloomberg Barclays Aggregate Bond Index	104	0.59	95	0.66
Emerging Markets Debt Fund	JP Morgan EMBI Global Diversified Index	220	0.30	NA	NA
Emerging Markets Equity Fund	MSCI Emerging Markets Index	445	0.04	421	-0.25
Emerging Markets Equity Index Fund	MSCI Emerging Markets Index	170	NA	146	NA
Equity Index Fund	Russell 3000 Index	7	NA	8	NA
Growth & Income Fund	S&P 500 Index	211	-0.22	236	0.11
High-Yield Fund	ICE BofA ML BB-B Cash Pay Issuer Constrained Index	118	-0.28	100	-0.45
Inflation-Linked Bond Fund	Bloomberg Barclays TIPS 1-10 Year Index	35	-1.13	34	-1.38
International Equity Fund	MSCI EAFE Index	446	-0.04	451	0.06
International Equity Index Fund	MSCI EAFE Index	209	NA	182	NA
International Opportunities Fund	MSCI All Country World Index ex-USA	529	0.37	507	0.30
Large-Cap Growth Fund	Russell 1000 Growth Index	349	-0.02	348	0.27
Large-Cap Growth Index Fund	Russell 1000 Growth Index	5	NA	6	NA
Large-Cap Value Fund	Russell 1000 Value Index	253	-0.32	229	-0.32
Large-Cap Value Index Fund	Russell 1000 Value Index	8	NA	8	NA
Lifecycle 2010 Fund	Lifecycle 2010 Fund Composite Index	78	0.19	84	0.20
Lifecycle 2015 Fund	Lifecycle 2015 Fund Composite Index	86	0.14	93	0.19
Lifecycle 2020 Fund	Lifecycle 2020 Fund Composite Index	91	0.11	98	0.17
Lifecycle 2025 Fund	Lifecycle 2025 Fund Composite Index	100	0.07	110	0.12
Lifecycle 2030 Fund	Lifecycle 2030 Fund Composite Index	113	0.00	122	0.08
Lifecycle 2035 Fund	Lifecycle 2035 Fund Composite Index	115	-0.03	129	0.05
Lifecycle 2040 Fund	Lifecycle 2040 Fund Composite Index	126	-0.09	140	0.01
Lifecycle 2045 Fund	Lifecycle 2045 Fund Composite Index	132	-0.08	141	-0.01
Lifecycle 2050 Fund	Lifecycle 2050 Fund Composite Index	132	-0.09	142	-0.01
Lifecycle 2055 Fund	Lifecycle 2055 Fund Composite Index	135	-0.11	142	-0.03
Lifecycle 2060 Fund	Lifecycle 2060 Fund Composite Index	134	-0.15	NA	NA
Lifecycle Retirement Income Fund	Lifecycle Retirement Income Fund Composite Index	77	0.23	79	0.23
Lifecycle Index 2010 Fund	Lifecycle Index 2010 Composite Benchmark	33	NA	28	NA
Lifecycle Index 2015 Fund	Lifecycle Index 2015 Composite Benchmark	34	NA	30	NA
Lifecycle Index 2020 Fund	Lifecycle Index 2020 Composite Benchmark	37	NA	31	NA
Lifecycle Index 2025 Fund	Lifecycle Index 2025 Composite Benchmark	41	NA	36	NA
Lifecycle Index 2030 Fund	Lifecycle Index 2030 Composite Benchmark	49	NA	42	NA
Lifecycle Index 2035 Fund	Lifecycle Index 2035 Composite Benchmark	52	NA	44	NA
Lifecycle Index 2040 Fund	Lifecycle Index 2040 Composite Benchmark	55	NA	46	NA
Lifecycle Index 2045 Fund	Lifecycle Index 2045 Composite Benchmark	59	NA	50	NA
Lifecycle Index 2050 Fund	Lifecycle Index 2050 Composite Benchmark	55	NA	47	NA
Lifecycle Index 2055 Fund	Lifecycle Index 2055 Composite Benchmark	58	NA	49	NA
Lifecycle Index 2060 Fund	Lifecycle Index 2060 Composite Benchmark	53	NA	NA	NA
Lifecycle Index Retirement Income Fund	Lifecycle Index Retirement Income Composite Benchmark	31	NA	28	NA
Lifestyle Aggressive Growth Fund	Lifestyle Aggressive Composite Benchmark	156	-0.24	168	-0.08
Lifestyle Conservative Fund	Lifestyle Conservative Composite Benchmark	86	0.18	87	0.25
Lifestyle Growth Fund	Lifestyle Growth Composite Benchmark	136	-0.13	142	0.00
Lifestyle Income Fund	Lifestyle Income Composite Benchmark	65	0.44	64	0.41
Lifestyle Moderate Fund	Lifestyle Moderate Composite Benchmark	116	0.00	119	0.13
Managed Allocation Fund	Managed Allocation Composite Index	105	0.10	107	0.19
Mid-Cap Growth Fund	Russell Midcap Growth Index	247	-0.84	247	-0.75
Mid-Cap Value Fund	Russell Midcap Value Index	200	-0.91	187	-0.69
Real Estate Securities Fund	FTSE NAREIT All Equity REITs Index	209	-0.08	192	0.11
S&P 500 Index Fund	S&P 500 Index	6	NA	7	NA
Short-Term Bond Fund	Bloomberg Barclays Short (1-3 Yr) Govt Credit Index	29	1.71	32	0.99
Small-Cap Blend Index Fund	Russell 2000 Index	8	NA	9	NA
Small-Cap Equity Fund	Russell 2000 Index	239	-0.09	226	0.14
Social Choice Bond Fund	Bloomberg Barclays Aggregate Bond Index	44	0.99	53	1.77
Social Choice Equity Fund	Russell 3000 Index	104	-0.47	104	-1.29

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All statistics were calculated using net of fees monthly returns using our Funds' and Accounts' official benchmarks.

Fund/Account	Benchmark	3 YR Tracking Error (BP)	3 YR Information Ratio (%)	5 YR Tracking Error (BP)	5 YR Information Ratio (%)
<b>Institutional Share Class Funds</b>					
Bond Fund	Bloomberg Barclays Aggregate Bond Index	61	1.21	63	1.21
Bond Index Fund	Bloomberg Barclays Aggregate Bond Index	30	NA	29	NA
Bond Plus Fund	Bloomberg Barclays Aggregate Bond Index	103	0.81	95	0.93
Emerging Markets Debt Fund	JP Morgan EMBI Global Diversified Index	221	0.43	NA	NA
Emerging Markets Equity Fund	MSCI Emerging Markets Index	443	0.10	422	-0.20
Emerging Markets Equity Index Fund	MSCI Emerging Markets Index	170	NA	147	NA
Enhanced Intl Equity Index Fund	MSCI EAFE Index	277	-0.12	250	-0.05
Enhanced Large-Cap Growth Index Fund	Russell 1000 Growth Index	100	0.07	100	-0.26
Enhanced Large-Cap Value Index Fund	Russell 1000 Value Index	89	-1.11	115	-0.49
Equity Index Fund	Russell 3000 Index	8	NA	9	NA
Growth & Income Fund	S&P 500 Index	211	-0.09	234	0.21
High-Yield Fund	ICE BofA ML BB-B Cash Pay Issuer Constrained Index	113	-0.04	97	-0.20
Inflation-Linked Bond Fund	Bloomberg Barclays TIPS 1-10 Year Index	32	-0.45	34	-0.63
International Equity Fund	MSCI EAFE Index	444	0.02	449	0.12
International Equity Index Fund	MSCI EAFE Index	208	NA	182	NA
International Opportunities Fund	MSCI All Country World Index ex-USA	529	0.42	506	0.35
Large-Cap Growth Fund	Russell 1000 Growth Index	351	0.07	349	0.35
Large-Cap Growth Index Fund	Russell 1000 Growth Index	6	NA	7	NA
Large-Cap Value Fund	Russell 1000 Value Index	256	-0.21	231	-0.20
Large-Cap Value Index Fund	Russell 1000 Value Index	7	NA	9	NA
Lifecycle 2010 Fund	Lifecycle 2010 Fund Composite Index	78	0.52	83	0.51
Lifecycle 2015 Fund	Lifecycle 2015 Fund Composite Index	82	0.44	89	0.48
Lifecycle 2020 Fund	Lifecycle 2020 Fund Composite Index	92	0.36	99	0.42
Lifecycle 2025 Fund	Lifecycle 2025 Fund Composite Index	98	0.30	110	0.35
Lifecycle 2030 Fund	Lifecycle 2030 Fund Composite Index	106	0.23	119	0.29
Lifecycle 2035 Fund	Lifecycle 2035 Fund Composite Index	115	0.18	130	0.24
Lifecycle 2040 Fund	Lifecycle 2040 Fund Composite Index	131	0.10	142	0.18
Lifecycle 2045 Fund	Lifecycle 2045 Fund Composite Index	130	0.10	142	0.18
Lifecycle 2050 Fund	Lifecycle 2050 Fund Composite Index	131	0.07	142	0.16
Lifecycle 2055 Fund	Lifecycle 2055 Fund Composite Index	134	0.07	145	0.15
Lifecycle 2060 Fund	Lifecycle 2060 Fund Composite Index	134	0.05	NA	NA
Lifecycle Retirement Income Fund	Lifecycle Retirement Income Fund Composite Index	75	0.55	78	0.54
Lifecycle Index 2010 Fund	Lifecycle Index 2010 Composite Benchmark	33	NA	29	NA
Lifecycle Index 2015 Fund	Lifecycle Index 2015 Composite Benchmark	35	NA	31	NA
Lifecycle Index 2020 Fund	Lifecycle Index 2020 Composite Benchmark	39	NA	34	NA
Lifecycle Index 2025 Fund	Lifecycle Index 2025 Composite Benchmark	42	NA	36	NA
Lifecycle Index 2030 Fund	Lifecycle Index 2030 Composite Benchmark	44	NA	38	NA
Lifecycle Index 2035 Fund	Lifecycle Index 2035 Composite Benchmark	49	NA	42	NA
Lifecycle Index 2040 Fund	Lifecycle Index 2040 Composite Benchmark	53	NA	46	NA
Lifecycle Index 2045 Fund	Lifecycle Index 2045 Composite Benchmark	54	NA	46	NA
Lifecycle Index 2050 Fund	Lifecycle Index 2050 Composite Benchmark	60	NA	51	NA
Lifecycle Index 2055 Fund	Lifecycle Index 2055 Composite Benchmark	60	NA	49	NA
Lifecycle Index 2060 Fund	Lifecycle Index 2060 Composite Benchmark	59	NA	NA	NA
Lifecycle Index Retirement Income Fund	Lifecycle Index Retirement Income Composite Benchmark	37	NA	32	NA
Lifestyle Aggressive Growth Fund	Lifestyle Aggressive Composite Benchmark	161	-0.07	170	0.07
Lifestyle Conservative Fund	Lifestyle Conservative Composite Benchmark	87	0.46	87	0.54
Lifestyle Growth Fund	Lifestyle Growth Composite Benchmark	135	0.07	140	0.19
Lifestyle Income Fund	Lifestyle Income Composite Benchmark	65	0.87	64	0.82
Lifestyle Moderate Fund	Lifestyle Moderate Composite Benchmark	116	0.21	118	0.35
Managed Allocation Fund	Managed Allocation Composite Index	98	0.38	105	0.45
Mid-Cap Growth Fund	Russell Midcap Growth Index	243	-0.75	245	-0.66
Mid-Cap Value Fund	Russell Midcap Value Index	199	-0.79	187	-0.56
Real Estate Securities Fund	FTSE NAREIT All Equity REITs Index	213	0.04	195	0.24
S&P 500 Index Fund	S&P 500 Index	6	NA	7	NA
Short-Term Bond Fund	Bloomberg Barclays Short (1-3 Yr) Govt Credit Index	30	2.48	32	1.85
Small-Cap Blend Index Fund	Russell 2000 Index	9	NA	9	NA
Small-Cap Equity Fund	Russell 2000 Index	237	0.01	223	0.25
Social Choice Bond Fund	Bloomberg Barclays Aggregate Bond Index	43	1.51	52	2.24
Social Choice Equity Fund	Russell 3000 Index	102	-0.25	102	-1.07
Tax-Exempt Bond Fund	Bloomberg Barclays 10 Year Municipal Bond Index	85	-0.93	89	-1.25

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All statistics were calculated using net of fees monthly returns using our Funds' and Accounts' official benchmarks.

Fund/Account	Benchmark	3 YR Tracking Error (BP)	3 YR Information Ratio (%)	5 YR Tracking Error (BP)	5 YR Information Ratio (%)
<b>Retail Share Class Funds</b>					
Bond Fund	Bloomberg Barclays Aggregate Bond Index	60	0.70	63	0.72
Bond Index Fund	Bloomberg Barclays Aggregate Bond Index	26	NA	25	NA
Bond Plus Fund	Bloomberg Barclays Aggregate Bond Index	101	0.51	94	0.60
Emerging Markets Debt Fund	JP Morgan EMBI Global Diversified Index	217	0.27	NA	NA
Emerging Markets Equity Fund	MSCI Emerging Markets Index	450	0.01	426	-0.28
Emerging Markets Equity Index Fund	MSCI Emerging Markets Index	175	NA	152	NA
Equity Index Fund	Russell 3000 Index	8	NA	8	NA
Growth & Income Fund	S&P 500 Index	214	-0.24	237	0.09
High-Yield Fund	ICE BofA ML BB-B Cash Pay Issuer Constrained Index	113	-0.31	97	-0.50
Inflation-Linked Bond Fund	Bloomberg Barclays TIPS 1-10 Year Index	35	-1.36	35	-1.54
International Equity Fund	MSCI EAFE Index	440	-0.05	446	0.05
International Opportunities Fund	MSCI All Country World Index ex-USA	535	0.33	509	0.27
Large-Cap Growth Fund	Russell 1000 Growth Index	348	-0.03	349	0.25
Large-Cap Value Fund	Russell 1000 Value Index	253	-0.34	229	-0.35
Lifecycle Retirement Income Fund	Retirement Income Fund Composite Index	75	0.22	78	0.22
Lifestyle Aggressive Growth Fund	Lifestyle Aggressive Composite Benchmark	164	-0.26	170	-0.12
Lifestyle Conservative Fund	Lifestyle Conservative Composite Benchmark	87	0.13	87	0.21
Lifestyle Growth Fund	Lifestyle Growth Composite Benchmark	134	-0.16	140	-0.02
Lifestyle Income Fund	Lifestyle Income Composite Benchmark	61	0.48	61	0.42
Lifestyle Moderate Fund	Lifestyle Moderate Composite Benchmark	116	-0.02	119	0.11
Managed Allocation Fund	Managed Allocation Composite Index	101	0.10	106	0.19
Mid-Cap Growth Fund	Russell Midcap Growth Index	245	-0.87	248	-0.78
Mid-Cap Value Fund	Russell Midcap Value Index	201	-0.93	188	-0.72
Real Estate Securities Fund	FTSE NAREIT All Equity REITs Index	212	-0.10	195	0.07
Short-Term Bond Fund	Bloomberg Barclays Short (1-3 Yr) Govt Credit Index	37	1.27	37	0.77
Small-Cap Equity Fund	Russell 2000 Index	237	-0.12	222	0.10
Social Choice Bond Fund	Bloomberg Barclays Aggregate Bond Index	39	0.97	48	1.83
Social Choice Equity Fund	Russell 3000 Index	102	-0.51	104	-1.33
Tax-Exempt Bond Fund	Bloomberg Barclays 10 Year Municipal Bond Index	87	-1.26	89	-1.55

## CREF Accounts, TIAA-CREF Funds - All Share Classes, and TIAA-CREF Life Funds 3 & 5 Year Annualized Tracking Error & Information Ratio for the period ending 6/30/2018

All statistics were calculated using net of fees monthly returns using our Funds' and Accounts' official benchmarks.

Fund/Account	Benchmark	3 YR Tracking Error (BP)	3 YR Information Ratio (%)	5 YR Tracking Error (BP)	5 YR Information Ratio (%)
<b>Premier Share Class Funds</b>					
Bond Fund	Bloomberg Barclays Aggregate Bond Index	62	0.90	66	0.90
Bond Index Fund	Bloomberg Barclays Aggregate Bond Index	28	NA	28	NA
Bond Plus Fund	Bloomberg Barclays Aggregate Bond Index	103	0.66	94	0.78
Emerging Markets Debt Fund	JP Morgan EMBI Global Diversified Index	224	0.33	NA	NA
Emerging Markets Equity Fund	MSCI Emerging Markets Index	448	0.07	425	-0.23
Emerging Markets Equity Index Fund	MSCI Emerging Markets Index	167	NA	146	NA
Equity Index Fund	Russell 3000 Index	7	NA	9	NA
Growth & Income Fund	S&P 500 Index	215	-0.15	236	0.16
High-Yield Fund	ICE BofA ML BB-B Cash Pay Issuer Constrained Index	122	-0.16	104	-0.31
Inflation-Linked Bond Fund	Bloomberg Barclays TIPS 1-10 Year Index	32	-0.93	31	-1.16
International Equity Fund	MSCI EAFE Index	443	-0.02	448	0.08
International Equity Index Fund	MSCI EAFE Index	208	NA	181	NA
International Opportunities Fund	MSCI All Country World Index ex-USA	532	0.39	507	0.32
Large-Cap Growth Fund	Russell 1000 Growth Index	351	0.02	350	0.30
Large-Cap Value Fund	Russell 1000 Value Index	253	-0.28	230	-0.28
Lifecycle 2010 Fund	Lifecycle 2010 Fund Composite Index	78	0.35	83	0.34
Lifecycle 2015 Fund	Lifecycle 2015 Fund Composite Index	84	0.24	89	0.29
Lifecycle 2020 Fund	Lifecycle 2020 Fund Composite Index	92	0.22	99	0.27
Lifecycle 2025 Fund	Lifecycle 2025 Fund Composite Index	97	0.15	108	0.23
Lifecycle 2030 Fund	Lifecycle 2030 Fund Composite Index	110	0.09	122	0.17
Lifecycle 2035 Fund	Lifecycle 2035 Fund Composite Index	113	0.05	128	0.12
Lifecycle 2040 Fund	Lifecycle 2040 Fund Composite Index	130	-0.01	141	0.08
Lifecycle 2045 Fund	Lifecycle 2045 Fund Composite Index	132	-0.02	143	0.06
Lifecycle 2050 Fund	Lifecycle 2050 Fund Composite Index	132	-0.02	140	0.07
Lifecycle 2055 Fund	Lifecycle 2055 Fund Composite Index	130	-0.06	142	0.05
Lifecycle 2060 Fund	Lifecycle 2060 Fund Composite Index	134	-0.06	NA	NA
Lifecycle Retirement Income Fund	Lifecycle Retirement Income Fund Composite Index	74	0.39	78	0.35
Lifecycle Index 2010 Fund	Lifecycle Index 2010 Composite Benchmark	34	NA	30	NA
Lifecycle Index 2015 Fund	Lifecycle Index 2015 Composite Benchmark	31	NA	28	NA
Lifecycle Index 2020 Fund	Lifecycle Index 2020 Composite Benchmark	36	NA	32	NA
Lifecycle Index 2025 Fund	Lifecycle Index 2025 Composite Benchmark	40	NA	35	NA
Lifecycle Index 2030 Fund	Lifecycle Index 2030 Composite Benchmark	44	NA	37	NA
Lifecycle Index 2035 Fund	Lifecycle Index 2035 Composite Benchmark	52	NA	44	NA
Lifecycle Index 2040 Fund	Lifecycle Index 2040 Composite Benchmark	53	NA	45	NA
Lifecycle Index 2045 Fund	Lifecycle Index 2045 Composite Benchmark	55	NA	45	NA
Lifecycle Index 2050 Fund	Lifecycle Index 2050 Composite Benchmark	58	NA	50	NA
Lifecycle Index 2055 Fund	Lifecycle Index 2055 Composite Benchmark	51	NA	44	NA
Lifecycle Index 2060 Fund	Lifecycle Index 2060 Composite Benchmark	56	NA	NA	NA
Lifecycle Index Retirement Income Fund	Lifecycle Index Retirement Income Composite Benchmark	34	NA	29	NA
Lifestyle Aggressive Growth Fund	Lifestyle Aggressive Composite Benchmark	161	-0.16	170	-0.01
Lifestyle Conservative Fund	Lifestyle Conservative Composite Benchmark	85	0.29	85	0.38
Lifestyle Growth Fund	Lifestyle Growth Composite Benchmark	136	-0.06	142	0.07
Lifestyle Income Fund	Lifestyle Income Composite Benchmark	64	0.66	62	0.64
Lifestyle Moderate Fund	Lifestyle Moderate Composite Benchmark	113	0.11	117	0.24
Mid-Cap Growth Fund	Russell Midcap Growth Index	246	-0.81	247	-0.72
Mid-Cap Value Fund	Russell Midcap Value Index	200	-0.87	187	-0.65
Real Estate Securities Fund	FTSE NAREIT All Equity REITs Index	209	-0.03	193	0.16
Short-Term Bond Fund	Bloomberg Barclays Short (1-3 Yr) Govt Credit Index	30	1.97	32	1.37
Small-Cap Equity Fund	Russell 2000 Index	238	-0.05	223	0.18
Social Choice Bond Fund	Bloomberg Barclays Aggregate Bond Index	42	1.28	51	2.02
Social Choice Equity Fund	Russell 3000 Index	103	-0.37	103	-1.21

**CREF Accounts, TIAA-CREF Funds - All Share Classes, and TIAA-CREF Life Funds  
3 & 5 Year Annualized Tracking Error & Information Ratio for the period ending  
6/30/2018**

All statistics were calculated using net of fees monthly returns using our Funds' and Accounts' official benchmarks.

<b>Fund/Account</b>	<b>Benchmark</b>	<b>3 YR Tracking Error (BP)</b>	<b>3 YR Information Ratio (%)</b>	<b>5 YR Tracking Error (BP)</b>	<b>5 YR Information Ratio (%)</b>
<b>LIFE Funds</b>					
Bond Fund	Bloomberg Barclays Aggregate Bond Index	76	0.75	69	0.70
Growth & Income Fund	S&P 500 Index	211	-0.14	234	0.19
Growth Equity Fund	Russell 1000 Growth Index	347	0.07	350	0.37
International Equity Fund	MSCI EAFE Index	446	0.06	448	0.15
Large-Cap Value Fund	Russell 1000 Value Index	258	-0.26	233	-0.25
Real Estate Securities Fund	FTSE NAREIT All Equity REITs Index	214	-0.05	197	0.21
Small-Cap Equity Fund	Russell 2000 Index	233	-0.06	221	0.18
Social Choice Equity Fund	Russell 3000 Index	113	-0.30	109	-1.14
Stock Index Fund	Russell 3000 Index	4	NA	4	NA
Balanced Fund	Life Balance Composite Benchmark	91	0.18	NA	NA

## Definitions:

**Excess Return (ER)\*:** a measure of an investment's return in excess of a benchmark.

**ER** = Portfolio Return - Benchmark Return

**Tracking Error (TE)\*:** a measure of the volatility of excess returns relative to a benchmark.

**TE** = Standard Deviation of Excess Return

$$\text{TE (Sample)} = \sqrt{\frac{n \sum_{i=1}^n e_i^2 - (\sum_{i=1}^n e_i)^2}{n(n-1)}} * \text{sqrt (frequency)}$$

**Information Ratio (IR)\*:** a measure of excess return per units of risk.

**Arithmetic IR\*** (*methodology is used by TIAA Risk Management*):

underlying Portfolio and Benchmark return information is generated from geometrically linked daily returns. The monthly excess return observations are then arithmetically averaged and then annualized to generate the Excess Return component. Information Ratio is derived by taking the ER component and dividing it by the Tracking Error.

$$\text{IR Arithmetic} = \frac{\text{Avg (Port Monthly Ret - Bmk Monthly Ret)}}{\text{TE (Sample)}} * 12$$

\* ER, TE, and IR are annualized