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### Females

Age	Annual Rate of						
	DEATH	DISABILITY	WITHDRAWAL			RETIREMENT	
			Service			Before 27 Years of Service	After 27 Years of Service*
			0 – 4	5 – 9	10+		
20	0.007%	0.01%	9.00%				
25	0.008	0.01	9.00	4.00%			
30	0.010	0.03	12.00	4.00	1.65%		
35	0.018	0.06	12.00	4.00	1.50		
40	0.026	0.12	12.00	4.00	1.30		
45	0.042	0.25	13.00	4.00	1.20		15.0%
50	0.062	0.44	13.00	5.00	1.50		18.0
55	0.096	0.65	15.00	5.00	2.00	5.5%	50.0
60	0.157	0.85	15.00	5.00	2.00	14.0	40.0
62	0.197	0.85	15.00	4.60	2.00	14.0	40.0
65	0.287	0.85	15.00	4.00	2.00	22.0	35.0
70	0.495	0.85	15.00	0.00	0.00	20.0	35.0
75	0.831	0.85	15.00	0.00	0.00	100.0	100.0

\*Plus 7.5% in year when first eligible for unreduced retirement with 27 years of service.

**DEATHS AFTER RETIREMENT:** The RP-2000 Combined Mortality Table projected to 2025 using scale BB (set forward two years for males and one year for females) is used for death after service retirement and beneficiaries. The RP-2000 Disabled Mortality Table (set forward two years for males and seven years for females) is used for death after disability retirement. There is a margin for future mortality improvement in the tables used by the System. Based on the results of the most recent experience study adopted by the Board on September 19, 2016, the numbers of expected future deaths are 15-19% less than the actual number of deaths that occurred during the study period for healthy retirees and 13-17% less than expected under the selected table for disabled retirees. Representative values of the assumed annual rates of death after service retirement and after disability retirement are shown below:

Age	Annual Rate of Death After			
	Service Retirement		Disability Retirement	
	Male	Female	Male	Female
45	0.1609%	0.1135%	2.3306%	1.2482%
50	0.2474	0.1718	2.9279	1.5650
55	0.4246	0.2658	3.4400	1.7807
60	0.6985	0.4409	3.5881	2.3164
65	1.1300	0.8100	3.8275	3.1687
70	1.8697	1.3739	4.7566	4.4032
75	3.2147	2.2899	6.3153	6.0857
80	5.5160	3.7551	8.3527	8.4679
85	9.5631	6.3873	10.9122	12.7572
90	17.2787	11.2476	17.2787	19.4718
95	27.1263	18.1190	27.1263	24.2074



## **Schedule D – Outline of Actuarial Assumptions and Methods**

ASSETS: Five-year market related actuarial value, as developed in Schedule B. The actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected actuarial value of assets, based on the ultimate assumed valuation rate of return of 7.50%. The amount recognized each year is 20% of the difference between market value and expected actuarial value.

EXPENSE LOAD: None.

PERCENT MARRIED: 100%, with females 3 years younger than males.

LOADS: Unused sick leave: 2% of active liability





## Schedule E – Actuarial Cost Method

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1. The valuation is prepared on the projected benefit basis, under which the present value, at the interest rate assumed to be earned in the future (currently at 7.50%), of each active member's expected benefit at retirement or death is determined, based on his/her age, service, sex and compensation. The calculations take into account the probability of a member's death or termination of employment prior to becoming eligible for a benefit, as well as the possibility of his/her terminating with a service, disability or survivor's benefit. Future salary increases and post-retirement cost-of-living adjustments are also anticipated. The present value of the expected benefits payable on account of the active members is added to the present value of the expected future payments to retired members and beneficiaries and inactive members to obtain the present value of all expected benefits payable from the System on account of the present group of members and beneficiaries.
2. The employer contributions required to support the benefits of the System are determined following a level funding approach, and consist of a normal contribution and an actuarial accrued liability contribution.
3. The normal contribution is determined using the "entry age normal" method. Under this method, a calculation is made to determine the uniform and constant percentage rate of employer contribution which, if applied to the compensation of the average new member during the entire period of his/her anticipated covered service, would be required in addition to the contributions of the member to meet the cost of all benefits payable on his/her behalf.
4. The unfunded actuarial accrued liability is determined by subtracting the present value of prospective employer normal contributions and member contributions, together with the current actuarial value of assets held, from the present value of expected benefits to be paid from the System.



## Schedule F – Summary of Main System Provisions

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### AS INTERPRETED FOR VALUATION PURPOSES

The Teachers' Retirement System of the State of Kentucky was established on July 1, 1940. The valuation took into account amendments to the System effective through June 30, 2019. The following summary describes the main benefit and contribution provisions of the System as interpreted for the valuation.

#### 1 - DEFINITIONS

"Final average salary" means the average of the five highest annual salaries which the member has received for service in a covered position and on which the member has made contributions or on which the public board, institution or agency has picked up the member contributions. For a member who retires after attaining age 55 with 27 years of service, "final average salary" means the average of the three highest annual salaries.

#### 2 - BENEFITS

##### Service Retirement Allowance

##### Members Before 7/1/2008

Condition for Allowance	Completion of 27 years of service or attainment of age 55 and 5 years of service.
Amount of Allowance	The annual retirement allowance for non-university members is equal to: <ul style="list-style-type: none"><li>(a) 2.0% of final average salary multiplied by service before July 1, 1983, plus</li><li>(b) 2.5% of final average salary multiplied by service after July 1, 1983.</li><li>(c) For individuals who become members of the Retirement System on or after July 1, 2002 and have less than 10 years of service at retirement, the retirement allowance is 2.0% of final average salary multiplied by service. If, however, they have 10 or more years, they receive a benefit percentage of 2.5% for all years of service up to 30 years.</li></ul>



## Schedule F – Summary of Main System Provisions

- (d) For members retiring on or after July 1, 2004, the retirement allowance formula is 3.0% of final average salary for each year of service credit earned in excess of 30 years.

The annual retirement allowance for university members is equal to 2.0% of final average salary multiplied by all years of service.

For all members, the annual allowance is reduced by 5% per year from the earlier of age 60 or the date the member would have completed 27 years of service.

The minimum annual service allowance for all members is \$440 multiplied by credited service.

Members on and after 7/1/2008

Condition for Retirement

Completion of 27 years of service, attainment of age 60 and 5 years of service or attainment of age 55 and 10 years of service.

Amount of Allowance

The annual retirement allowance for non-university members is equal to:

- 1.7% of final average salary if service is 10 years or less.
- 2.0% of final average salary if service is greater than 10 years and no more than 20 years.
- 2.3% of final average salary if service is greater than 20 years but no more than 26 years.
- 2.5% of final average salary if service is greater than 26 years but no more than 30 years.
- 3.0% of final average salary for years of service greater than 30 years.

The annual retirement allowance for university members is equal to:

- 1.5% of final average salary if service is 10 years or less.
- 1.7% of final average salary if service is greater than 10 years and no more than 20 years.
- 1.85% of final average salary if service is greater than 20 years but less than 27 years.
- 2.0% of final average salary if service is greater than or equal to 27 years.

For all members, the annual allowance is reduced by 6% per year from the earlier of age 60 or the date the member would have completed 27 years of service.



## Schedule F – Summary of Main System Provisions

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### Disability Retirement Allowance

#### Condition for Allowance

Totally and permanently incapable of being employed as a teacher and under 27 years of service but after completing 5 years of service.

#### Amount of Allowance

The disability allowance is equal to 60% of the member's final average salary. The disability allowance is payable over an entitlement period equal to 25% of the service credited to the member at the date of disability or five years, whichever is longer. After the disability entitlement period has expired and if the member remains disabled, he will be retired under service retirement. The service retirement allowance will be computed with service credit given for the period of disability retirement. The allowance will not be less than \$6,000 per year. The service retirement allowance will not be reduced for commencement of the allowance before age 60 or the completion of 27 years of service.

### Benefits Payable on Separation from Service

Any member who ceases to be in service is entitled to receive his contributions with allowable interest. A member who has completed 5 years of creditable service and leaves his contributions with the System may be continued in the membership of the System after separation from service, and file application for service retirement after the attainment of age 60.

### Life Insurance

A separate Life Insurance fund has been created as of June 30, 2000 to pay benefits on behalf of deceased TRS active and retired members.



## Schedule F – Summary of Main System Provisions

### Death Benefits

A surviving spouse of an active member with less than 10 years of service may elect to receive an annual allowance of \$2,880 except that if income from other sources exceeds \$6,600 per year the annual allowance will be \$2,160.

A surviving spouse of an active member with 10 or more years of service may elect to receive an allowance which is the actuarial equivalent of the allowance the deceased member would have received upon retirement. The allowance will commence on the date the deceased member would have been eligible for service retirement and will be payable during the life of the spouse.

If the deceased member is survived by unmarried children under age 18 the following schedule of annual allowances applies:

<u>Number of Children</u>	<u>Annual Allowance</u>
1	\$ 2,400
2	4,080
3	4,800
4 or more	5,280

The allowances are payable until a child attains age 18, or age 23 if a full-time student.

If the member has no eligible survivor, a refund of his accumulated contributions is payable to his estate.

### Options

In lieu of the regular Option 1, a retirement allowance payable in the form of a life annuity with refundable balance, any member before retirement may elect to receive a reduced allowance which is actuarially equivalent to the full allowance, in one of the following forms:

Option 2. A single life annuity payable during the member's lifetime with payments for 10 years certain.

Option 3. At the death of the member his allowance is continued throughout the life of his beneficiary.

Option 3(a). At the death of the beneficiary designated by the member under Option 3, the member's benefit will revert to what would have been paid had he not selected an option.

Option 4. At the death of the member one half of his allowance is continued throughout the life of his beneficiary.



## Schedule F – Summary of Main System Provisions

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Option 4(a). At the death of the beneficiary designated by the member under Option 4, the member's benefit will revert to what would have been paid had he not selected an option.

Post-Retirement Adjustments

The retirement allowance of each retired member and of each beneficiary shall be increased by 1.50% each July 1.

### 3 - CONTRIBUTIONS

Member Contributions

University members contribute 7.625% of salary to the Retirement System. Non-university members contribute 9.105% of salary to the Retirement System. Member contributions are picked up by the employer.



## Schedule G – Tables of Employee Data

**TABLE 1**  
**AGE – SERVICE TABLE**

Distribution of Active Members as of June 30, 2019 by Age and Service Groups

Attained Age	Completed Years of Service									Total	
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 & Over	No.	Payroll
Under 25	1,884	1,655	5							3,544	\$ 78,310,776
25 to 29	971	4,560	1,752	1						7,284	287,762,572
30 to 34	614	1,965	4,431	1,572						8,582	407,539,614
35 to 39	706	1,524	2,173	4,510	1,551	9				10,473	559,874,557
40 to 44	610	1,190	1,375	2,103	4,096	1,196	3			10,573	614,043,506
45 to 49	534	938	1,074	1,501	2,026	3,846	1,015	4		10,938	671,896,297
50 to 54	632	674	649	965	1,242	1,700	2,005	335	3	8,205	497,549,540
55 to 59	846	778	468	580	900	994	732	248	47	5,593	294,393,011
60 to 64	786	936	337	264	450	475	380	102	40	3,770	152,726,863
65 to 69	563	808	273	120	154	167	124	50	40	2,299	61,148,793
70 & Over	362	549	252	79	39	32	32	16	25	1,386	23,182,181
<b>Total Count</b>	<b>8,508</b>	<b>15,577</b>	<b>12,789</b>	<b>11,695</b>	<b>10,458</b>	<b>8,419</b>	<b>4,291</b>	<b>755</b>	<b>155</b>	<b>72,647</b>	<b>\$ 3,648,427,710</b>

Average Age: 43.6  
Average Service: 11.0



## Schedule G – Tables of Employee Data

TABLE 2

SCHEDULE OF ACTIVE MEMBER VALUATION DATA

<u>Valuation Date</u>	<u>Number</u>	<u>Annual Payroll</u>	<u>Annual Average Pay</u>	<u>% Increase in Average Pay</u>
6/30/2019	72,647	\$ 3,648,427,710	\$ 50,221	0.58%
6/30/2018	72,205	3,605,115,787	49,929	1.06
6/30/2017	72,130	3,563,584,342	49,405	0.35
6/30/2016	71,848	3,537,226,348	49,232	1.19
6/30/2015	72,246	3,515,113,127	48,655	2.45
6/30/2014	73,407	3,486,326,799	47,493	2.12
6/30/2013	74,831	3,480,066,406	46,506	1.51
6/30/2012	75,951	3,479,567,004	45,813	1.33
6/30/2011	76,349	3,451,756,287	45,210	3.97
6/30/2010	76,387	3,321,614,223	43,484	1.51





## Schedule G – Tables of Employee Data

TABLE 3

**NUMBER OF RETIRED MEMBERS AND BENEFICIARIES  
AND THEIR BENEFITS BY AGE  
AS OF JUNE 30, 2019**

Attained Age	Number of Members	Total Annual Benefits	Average Annual Benefits
49 & Under	824	\$ 10,692,233	\$ 12,976
50 - 54	1,518	61,967,155	40,822
55 - 59	4,236	185,461,778	43,782
60 - 64	7,491	315,953,646	42,178
65 - 69	12,391	498,526,028	40,233
70 - 74	12,818	492,020,745	38,385
75 - 79	7,749	285,961,475	36,903
80 - 84	4,442	153,101,791	34,467
85 - 89	2,582	78,892,796	30,555
90 - 94	1,195	33,153,191	27,743
95 & Over	<u>367</u>	<u>8,720,878</u>	<u>23,763</u>
Total	55,613	\$ 2,124,451,716	\$ 38,201

Average Current Age: 70.1

Average Age at Retirement: 56.2



## Schedule G – Tables of Employee Data

TABLE 4

### SCHEDULE OF RETIRANTS, BENEFICIARIES AND SURVIVORS ADDED TO AND REMOVED FROM ROLLS

Fiscal Year Ending June 30	ADDED TO ROLLS		REMOVED FROM ROLLS		ROLLS AT END OF YEAR		Increase In Annual Allowances	Average Annual Allowance
	Number	Annual Allowances (in millions)	Number	Annual Allowances (in millions)	Number	Annual Allowances (in millions)		
2010	2,105	\$93.7	1,021	\$21.8	43,134	\$1,352.2	5.6%	\$31,348
2011	2,133	98.9	848	17.7	44,419	1,433.4	6.0%	32,270
2012	2,513	111.2	838	19.4	46,094	1,525.2	6.4%	33,089
2013	2,303	105.7	991	22.2	47,406	1,608.7	5.5%	33,934
2014	2,146	99.6	976	23.4	48,576	1,684.9	4.7%	34,685
2015	2,917	119.1	1,671	36.3	49,822	1,767.6	4.9%	35,479
2016	2,753	128.2	1,012	26.9	51,563	1,868.9	5.7%	36,244
2017	2,638	119.8	1,235	35.2	52,966	1,953.5	4.5%	36,881
2018	2,499	120.0	1,088	30.0	54,377	2,043.5	4.6%	37,581
2019	2,355	113.8	1,119	32.8	55,613	2,124.5	4.0%	38,201



## Schedule H – 20-year Baseline Projection of TRS

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The results of actuarial valuations are a “snapshot” of the financial position on the valuation date, based on the assumed number of active employees and current beneficiaries. Projections simulate future actuarial valuation results over a forecast period (twenty years in this case) by “creating” future new hires and performing valuations using the projected membership. The following items are assumed for the projected results provided on the following page.

- Active Employee Growth Rate: 0.00%
- Valuation Discount Rate: 7.50%
- Investment Rate of Return: 7.50% each year
- Actuarial Value of Assets: 5 year smoothing, No Corridor
- Amortization Method: Level Percent of Payroll, Closed
- Amortization Bases:
  - Legacy amortization from 2014 valuation amortized over closed 30-year period
  - Subsequent bases amortized over closed 20-year period from date of valuation
- Amortization Period: Weighted 25.4-year period as of Valuation Date
- Future Contributions: Based on Expected Actuarially Determined Contributions

All other demographic and economic changes are assumed to occur in accordance with the actuarial assumptions used for the actuarial valuation.



## Schedule H – 20-year Baseline Projection of TRS

Fiscal Year End	Non-University Payroll (1)	University Payroll (2)	Total Payroll (3)	Unfunded Accrued Liability (4)	Funding Ratio (5)	Actuarially Determined Contribution in Dollars (6)
2022	\$3,629,800	\$199,926	\$3,829,726	\$14,522,552	58.1%	\$1,165,854
2023	3,719,567	205,035	3,924,602	14,603,366	58.7%	1,200,978
2024	3,809,893	210,510	4,020,403	14,489,240	60.0%	1,220,766
2025	3,901,606	216,801	4,118,407	14,629,891	60.5%	1,262,366
2026	3,991,126	224,165	4,215,291	14,866,282	60.7%	1,315,742
2027	4,081,214	232,450	4,313,664	15,031,350	61.2%	1,366,547
2028	4,172,477	241,666	4,414,143	15,172,649	61.6%	1,419,348
2029	4,268,103	251,466	4,519,569	15,279,228	62.1%	1,476,864
2030	4,367,514	261,323	4,628,837	15,346,697	62.7%	1,536,450
2031	4,470,072	271,796	4,741,868	15,369,197	63.4%	1,596,994
2032	4,578,015	282,465	4,860,480	15,342,978	64.1%	1,661,599
2033	4,691,000	293,137	4,984,137	15,256,546	64.9%	1,728,438
2034	4,807,117	304,819	5,111,936	15,106,934	65.9%	1,797,885
2035	4,930,521	316,176	5,246,697	14,887,872	66.9%	1,870,030
2036	5,060,198	327,783	5,387,981	14,586,670	68.1%	1,944,574
2037	5,197,690	340,357	5,538,047	14,197,048	69.4%	2,023,913
2038	5,343,656	353,535	5,697,191	13,704,910	70.9%	2,159,827
2039	5,498,384	367,474	5,865,858	13,102,302	72.6%	2,198,723
2040	5,662,115	382,131	6,044,246	12,378,147	74.5%	2,351,150
2041	5,836,091	397,499	6,233,590	11,463,252	76.7%	2,473,450