

# **Cincinnati Retirement System**

**GASB 67/68 Report as of  
June 30, 2021**

**Produced by Cheiron  
October 2021**

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*Letter of Transmittal*

October 7, 2021

Board of Trustees  
Cincinnati Retirement System  
801 Plum Street  
Suite 328  
Cincinnati, Ohio 45202

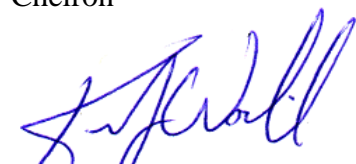
Dear Members of the Board:

The purpose of this report is to provide accounting and financial disclosure information under the Governmental Accounting Standards Board (GASB) Statement No. 67 for the Cincinnati Retirement System and GASB Statement No. 68 for the employer. This information includes:

- Calculation of the Net Pension Liability at the discount rate as well as discount rates 1% higher and lower than the discount rate,
- Changes in the Net Pension Liability,
- Schedule of Employer Contributions,
- Disclosure of Deferred Inflows and Outflows, and
- Calculation of the Annual Pension Expense for the employer.

If you have any questions about the report or would like additional information, please let us know.

Sincerely,  
Cheiron



Kevin J. Woodrich, FSA, EA, MAAA  
Principal Consulting Actuary



Janet Cranna, FSA, FCA, EA, MAAA  
Principal Consulting Actuary

**CITY OF CINCINNATI RETIREMENT SYSTEM  
GASB 67 AND 68 REPORTING FOR JUNE 30, 2021 MEASUREMENT DATE**

**SECTION I – BOARD SUMMARY**

The purpose of this report is to provide accounting and financial disclosure information under the Governmental Accounting Standards Board (GASB) Statement No. 67 for the City of Cincinnati Retirement System and Statement No. 68 for the employer. This information includes:

- Calculation of the Net Pension Liability at the discount rate as well as discount rates 1% higher and lower than the discount rate,
- Changes in the Net Pension Liability,
- Schedule of Employer Contributions,
- Disclosure of Deferred Inflows and Outflows, and
- Calculation of the Annual Pension Expense for the employer.

**Highlights**

The reporting date for the City of Cincinnati Retirement System (CRS) is June 30, 2021. Measurements as of the reporting date are based on the fair value of assets as of June 30, 2021 and Total Pension Liability as of the December 31, 2020 valuation date, updated to June 30, 2021.

All results shown for years prior to June 30, 2019 are based on the prior actuary’s reports.

The table below provides a summary of the key results during this reporting period.

<b>Summary of Results</b>		
<b>Reporting Date</b>	<b>6/30/2021</b>	<b>6/30/2020</b>
<b>Measurement Date</b>	<b>6/30/2021</b>	<b>6/30/2020</b>
<b>Valuation Date</b>	<b>12/31/2020</b>	<b>12/31/2019</b>
Total Pension Liability	\$ 2,543,137	\$ 3,819,397
Plan Fiduciary Net Position	<u>1,922,316</u>	<u>1,576,205</u>
Net Pension Liability	\$ 620,821	\$ 2,243,192
Deferred Outflows	(40,627)	(527,688)
Deferred Inflows	<u>852,101</u>	<u>0</u>
Net Impact on Statement of Net Position	\$ 1,432,295	\$ 1,715,504
Pension Expense (\$ Amount)	\$ (248,784)	\$ 818,756
Pension Expense (% of Payroll)	(114.03%)	374.80%

*Amounts in Thousands*

The Net Pension Liability (NPL) decreased substantially from the prior year. This change is primarily attributable to favorable investment returns during the year and the discount rate used to value the Total Pension Liability being 7.50% this year compared to 3.56% last year.

**CITY OF CINCINNATI RETIREMENT SYSTEM  
GASB 67 AND 68 REPORTING FOR JUNE 30, 2021 MEASUREMENT DATE**

**SECTION I – BOARD SUMMARY**

Assumption changes led to a decrease of \$1,395,498 thousands in the TPL. This decrease was attributable to using a discount rate of 7.50% compared to the 3.56% used last year. More details about this change can be found in Section III of this report. Assumption changes and an actuarial loss of \$85,273 thousands are recognized over the average remaining service life, which is 1.91 years.

The System had an investment gain of \$365,368 thousands based on a favorable investment return of 31.7%. This investment gain is recognized over five years.

Since the last valuation, the City offered an Early Retirement Incentive Program (ERIP) which increased the TPL by \$24,407 thousands. Plan changes are fully recognized immediately.

Unrecognized amounts are reported as deferred inflows and deferred outflows. As of the end of the reporting year, the employer would report a Net Pension Liability of \$620,821 thousands, Deferred Inflows of \$852,101, and Deferred Outflows of \$40,627 thousands. Consequently, the net impact on the employer's Statement of Net Position due to the Cincinnati Retirement System would be \$1,432,295 thousands at the end of the reporting year. In addition, any contributions between the measurement date and the reporting date would be reported as deferred outflows to offset the cash outflow reported.

For the measurement year ending June 30, 2021, the annual pension expense is negative \$248,784 thousands or negative 114.0% of covered payroll. This amount is not related to the employer's contribution to the Retirement System (\$34,425 thousands) but instead represents the change in the net impact on the employer's Statement of Net Position plus employer contributions (\$1,432,295 – \$1,715,504 + \$34,425). The pension expense is significantly less than the expense for the prior year. Volatility in pension expense from year to year is to be expected. It will largely be driven by investment gains or losses, but other changes can also have a significant impact such as the changes in the discount rate. The significant decrease in this year's pension expense was primarily due to the discount rate increasing from 3.56% to 7.50% and a favorable investment return. A breakdown of the components of the net pension expense is shown in this report.

**CITY OF CINCINNATI RETIREMENT SYSTEM  
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**SECTION II – CERTIFICATION**

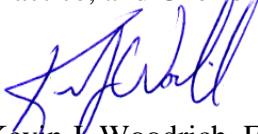
The purpose of this report is to provide accounting and financial reporting information under GASB No. 67 for the Cincinnati Retirement System and under GASB No. 68 for the employer. This report is for the use of the Cincinnati Retirement System, the employer, and their auditors in preparing financial reports in accordance with applicable law and accounting requirements. This report is not appropriate for other purposes, including the measurement of funding requirements for the Cincinnati Retirement System.

In preparing our report, we relied on information (some oral and some written) supplied by the City. This information includes, but is not limited to, the plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23.

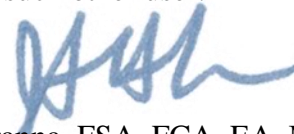
Future actuarial measurements may differ significantly from the current measurements due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions, changes in economic or demographic assumptions, and changes in plan provisions or applicable law.

This report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board as well as applicable laws and regulations. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys, and our firm does not provide any legal services or advice.

This report was prepared for the Cincinnati Retirement System and the employer for the purposes described herein and for the use by the Plan auditor in completing an audit related to the matters herein. Other users of this report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to any such other user.



Kevin J. Woodrich, FSA, EA, MAAA  
Principal Consulting Actuary



Janet Cranna, FSA, FCA, EA, MAAA  
Principal Consulting Actuary

**CITY OF CINCINNATI RETIREMENT SYSTEM  
GASB 67 AND 68 REPORTING FOR JUNE 30, 2021 MEASUREMENT DATE**

**SECTION III – DETERMINATION OF DISCOUNT RATE**

The discount rate used to measure the Total Pension Liability was 7.50%.

The projection of cash flows used to determine the discount rate assumed that Plan member contributions will continue to be made at the rates specified in the City Code. Employer contributions were assumed to be made in accordance with the Collaborative Settlement Agreement. That agreement includes contributions equal to 16.25% of pay for full-time active and DROP members. A contribution totaling 3.00% of pay is made on behalf of part-time actives. In addition, we reflected the City's intent to contribute \$2.8 million each year for the next 15 years to pay for the increase in liabilities due to the Early Retirement Incentive Program (ERIP) beginning January 1, 2022. In accordance with GASB, the projected contribution amounts for new hires were reduced by the portion expected to cover the normal cost for these new hires. Total payroll was projected using the December 31, 2020 census data and the assumptions shown in Appendix B.

Based on these assumptions, the System's fiduciary net position was projected to be available to make projected future benefit payments for current members. Projected benefit payments are discounted at the long-term expected return on assets of 7.50% to the extent the fiduciary net position is available to make the payments. Consequently, the single equivalent rate used to determine the Total Pension Liability as of June 30, 2021 is 7.50%. By comparison, the single equivalent rate used to determine the Total Pension Liability as of June 30, 2020 was 3.56%.

The projections are based upon the System's financial status on the Valuation Date, the indicated set of methods and assumptions and the requirements described in GASB 67. As such, the projections are not reflective of the cash flows and asset accumulations that would occur on an ongoing basis, reflecting the impact of future members.

**CITY OF CINCINNATI RETIREMENT SYSTEM  
GASB 67 AND 68 REPORTING FOR JUNE 30, 2021 MEASUREMENT DATE**

**SECTION IV – PROJECTION OF TOTAL PENSION LIABILITY**

The Total Pension Liability (TPL) at the end of the measurement year, June 30, 2021, is measured as of the valuation date of December 31, 2020 and projected to June 30, 2021. Valuations will be completed every year. Each valuation will be rolled forward six months to provide the GASB liability. There were assumption changes during the period, which are reflected in these numbers. The table below shows the projection of the TPL at the discount rate used for disclosure and plus and minus one percent from the rate used for disclosure. TPL and Service Cost have been determined using the entry age actuarial cost method as mandated in GASB Statement 67.

<b>Projection of Total Pension Liability from Valuation to Measurement Date</b>			
<b>Discount Rate</b>	<b>6.50%</b>	<b>7.50%</b>	<b>8.50%</b>
<b>Valuation Total Pension Liability, 12/31/2020</b>			
Actives	\$ 515,767	\$ 440,855	\$ 379,493
Deferred Vested	31,090	26,668	23,123
Retirees	2,248,849	2,065,724	1,908,419
<b>Total</b>	<b>\$ 2,795,706</b>	<b>\$ 2,533,247</b>	<b>\$ 2,311,035</b>
<b>Service Cost</b>	13,654	10,726	8,513
<b>Benefit Payments</b>	(92,621)	(92,621)	(92,621)
<b>Interest</b>	88,177	91,785	94,483
<b>Total Pension Liability, 6/30/2021</b>	<b>\$ 2,804,916</b>	<b>\$ 2,543,137</b>	<b>\$ 2,321,410</b>

*Amounts in Thousands*

The TPL as of June 30, 2021 was determined using standard projection (roll forward) techniques. The roll forward calculation shown above adds the service cost (also called the normal cost), reflecting the experience, assumption changes and benefit change, for the first half of 2021, subtracts the expected benefit payments for the period, and then adjusts for interest based on the single equivalent interest rate used to measure TPL as of the Valuation Date.

The roll forward calculation for the expected change, as shown in the following table, is determined using a similar procedure, except that the TPL and service cost are based on GASB 67/68 results as of the prior Measurement Date, therefore a one-year projection is used, and actual benefit payments are subtracted. The difference between the expected TPL and the projected experience TPL as of June 30, 2021, before reflecting any assumption changes, is the experience (gain) or loss for the period. Finally, there is an assumption gain from increasing the discount rate from 3.56% to 7.50%.



**CITY OF CINCINNATI RETIREMENT SYSTEM  
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**SECTION IV – PROJECTION OF TOTAL PENSION LIABILITY**

<b>Projection of Total Pension Liability from Valuation to Measurement Date</b>				
	Expected	Experience	Assumption	Plan Changes
Measurement Date	6/30/2020	12/31/2020	12/31/2020	12/31/2020
Projection Period	1 year	1/2 year	1/2 year	1/2 year
Discount Rate	3.56%	3.56%	7.50%	7.50%
<b>Total as of Measurement Date</b>	\$ 3,819,397	\$ 3,909,158	\$ 2,508,577	\$ 2,533,247
Service Cost	61,020	29,273	11,876	10,726
Benefit Payments	(185,241)	(92,621)	(92,621)	(92,621)
Interest	133,779	68,418	90,898	91,785
<b>Net Changes</b>	<u>\$ 9,558</u>	<u>\$ 5,070</u>	<u>\$ 10,153</u>	<u>\$ 9,890</u>
<b>Balance at 6/30/2021</b>	\$ 3,828,955	\$ 3,914,228	\$ 2,518,730	\$ 2,543,137
Experience (Gain)/Loss [Experience - Expected]		\$ 85,273		
Assumption (Gain)/Loss [Assumption - Experience]			\$ (1,395,498)	
Benefit (Gain)/Loss [Plan Changes - Assumption]				\$ 24,407

*Amounts in Thousands*

**CITY OF CINCINNATI RETIREMENT SYSTEM  
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**SECTION V – NOTE DISCLOSURES**

The table below shows the changes in the Total Pension Liability, the Plan Fiduciary Net Position (i.e., fair value of System assets), and the Net Pension Liability during the Measurement Year.

<b>Change in Net Pension Liability</b>			
	Increase (Decrease)		
	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)
<b>Balances at 6/30/2020</b>	\$ 3,819,397	\$ 1,576,205	\$ 2,243,192
<b>Changes for the year:</b>			
Service cost	61,020		61,020
Interest	133,779		133,779
Changes of benefits	24,407		24,407
Differences between expected and actual experience	85,273		85,273
Changes of assumptions	(1,395,498)		(1,395,498)
Contributions - employer		34,425	(34,425)
Contributions - member		20,025	(20,025)
Net investment income		478,701	(478,701)
Benefit payments	(185,241)	(185,241)	0
Administrative expense		(1,799)	1,799
<b>Net changes</b>	<u>\$ (1,276,260)</u>	<u>\$ 346,111</u>	<u>\$ (1,622,371)</u>
<b>Balances at 6/30/2021</b>	<u>\$ 2,543,137</u>	<u>\$ 1,922,316</u>	<u>\$ 620,821</u>

*Amounts in Thousands*

Assumption changes led to a decrease of \$1,395,498 thousands in the TPL. This decrease was attributable to using a discount rate of 7.50% compared to the 3.56% used last year. More details about this change can be found in Section III of this report. In addition, there was an experience loss of \$85,273 thousands in the TPL and an increase of \$24,407 due to the Early Retirement Incentive Program.

**CITY OF CINCINNATI RETIREMENT SYSTEM  
GASB 67 AND 68 REPORTING FOR JUNE 30, 2021 MEASUREMENT DATE**

**SECTION V – NOTE DISCLOSURES**

Changes in the discount rate affect the measurement of the TPL. Lower discount rates produce a higher TPL, and higher discount rates produce a lower TPL. Because the discount rate does not affect the measurement of assets, the percentage change in the NPL can be very significant for a relatively small change in the discount rate. The table below shows the sensitivity of the NPL to the discount rate.

<b>Sensitivity of Net Pension Liability to Changes in Discount Rate</b>			
	<b>1% Decrease 6.50%</b>	<b>Discount Rate 7.50%</b>	<b>1% Increase 8.50%</b>
Total Pension Liability	\$ 2,804,916	\$ 2,543,137	\$ 2,321,410
Plan Fiduciary Net Position	<u>1,922,316</u>	<u>1,922,316</u>	<u>1,922,316</u>
Net Pension Liability	<u>\$ 882,600</u>	<u>\$ 620,821</u>	<u>\$ 399,094</u>
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	68.5%	75.6%	82.8%

*Amounts in Thousands*

A 1% decrease in the discount rate increases the TPL by approximately 10% and increases the NPL by approximately 42%. A 1% increase in the discount rate decreases the TPL by approximately 9% and decreases the NPL by approximately 36%.

**CITY OF CINCINNATI RETIREMENT SYSTEM  
GASB 67 AND 68 REPORTING FOR JUNE 30, 2021 MEASUREMENT DATE**

**SECTION VI – REQUIRED SUPPLEMENTARY INFORMATION**

The schedules of Required Supplementary Information should eventually build up to show 10 years of information in the System’s disclosures. The schedules on the following two pages show the change in NPL and related ratios required by GASB for the past eight years.

<b>Schedule of Changes in Net Pension Liability and Related Ratios</b>				
	<b>FYE 2021</b>	<b>FYE 2020</b>	<b>FYE 2019</b>	<b>FYE 2018</b>
<b><u>Total Pension Liability (TPL)</u></b>				
Service cost (MOY)	\$ 61,020	\$ 37,451	\$ 23,750	\$ 22,834
Interest	133,779	162,407	172,502	163,313
Changes of benefit terms	24,407	0	0	0
Differences between expected and actual experience	85,273	26,726	46,025	29,889
Changes of assumptions	(1,395,498)	798,211	538,042	50,392
Benefit payments, including refunds	(185,241)	(175,505)	(169,901)	(168,482)
<b>Net change in TPL</b>	<b>\$ (1,276,260)</b>	<b>\$ 849,290</b>	<b>\$ 610,418</b>	<b>\$ 97,946</b>
<b>TPL - beginning</b>	<b><u>3,819,397</u></b>	<b><u>2,970,107</u></b>	<b><u>2,359,689</u></b>	<b><u>2,261,743</u></b>
<b>TPL - ending</b>	<b><u>\$ 2,543,137</u></b>	<b><u>\$ 3,819,397</u></b>	<b><u>\$ 2,970,107</u></b>	<b><u>\$ 2,359,689</u></b>
<b><u>Plan fiduciary net position</u></b>				
Contributions - employer	\$ 34,425	\$ 34,410	\$ 33,763	\$ 32,586
Contributions - member	20,025	19,892	19,457	18,873
Net investment income	478,701	(20,930)	76,163	140,314
Benefit payments, including refunds of member contributions	(185,241)	(175,505)	(169,901)	(168,482)
Administrative expense	(1,799)	(1,868)	(1,472)	(1,485)
<b>Net change in plan fiduciary net position</b>	<b>\$ 346,111</b>	<b>\$ (144,001)</b>	<b>\$ (41,990)</b>	<b>\$ 21,806</b>
<b>Plan fiduciary net position - beginning</b>	<b><u>1,576,205</u></b>	<b><u>1,720,206</u></b>	<b><u>1,762,196</u></b>	<b><u>1,740,390</u></b>
<b>Plan fiduciary net position - ending</b>	<b><u>\$ 1,922,316</u></b>	<b><u>\$ 1,576,205</u></b>	<b><u>\$ 1,720,206</u></b>	<b><u>\$ 1,762,196</u></b>
<b>Net pension liability - ending</b>	<b><u>\$ 620,821</u></b>	<b><u>\$ 2,243,192</u></b>	<b><u>\$ 1,249,901</u></b>	<b><u>\$ 597,493</u></b>
<b>Plan fiduciary net position as a percentage of the TPL</b>	75.59%	41.27%	57.92%	74.68%
<b>Covered payroll</b>	\$ 218,178	\$ 218,451	\$ 215,683	\$ 208,317
<b>Net pension liability as a percentage of covered payroll</b>	284.55%	1026.86%	579.51%	286.82%

*Amounts in Thousands*

**CITY OF CINCINNATI RETIREMENT SYSTEM  
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**SECTION VI – REQUIRED SUPPLEMENTARY INFORMATION**

<b>Schedule of Changes in Net Pension Liability and Related Ratios</b>				
	<b>FYE 2017</b>	<b>FYE 2016*</b>	<b>FYE 2015</b>	<b>FYE 2014</b>
<b><u>Total Pension Liability (TPL)</u></b>				
Service cost (MOY)	\$ 20,576	\$ 31,764	\$ 27,785	\$ 25,937
Interest	159,912	143,383	149,052	148,408
Changes of benefit terms	29,208	(76,301)	0	0
Differences between expected and actual experience	3,545	4,137	(14,024)	0
Changes of assumptions	0	(627,693)	155,948	(17,827)
Benefit payments, including refunds	(167,320)	(163,931)	(161,407)	(157,934)
<b>Net change in TPL</b>	<b>\$ 45,921</b>	<b>\$ (688,641)</b>	<b>\$ 157,354</b>	<b>\$ (1,416)</b>
<b>TPL - beginning</b>	<b><u>2,215,822</u></b>	<b><u>2,904,463</u></b>	<b><u>2,747,109</u></b>	<b><u>2,748,525</u></b>
<b>TPL - ending</b>	<b><u>\$ 2,261,743</u></b>	<b><u>\$ 2,215,822</u></b>	<b><u>\$ 2,904,463</u></b>	<b><u>\$ 2,747,109</u></b>
<b><u>Plan fiduciary net position</u></b>				
Contributions - employer	\$ 30,868	\$ 67,939	\$ 29,084	\$ 37,740
Contributions - member	17,740	16,337	16,186	15,059
Net investment income	209,299	226,266	49,138	258,381
Benefit payments, including refunds of member contributions	(167,320)	(163,931)	(161,407)	(157,934)
Administrative expense	(1,572)	(5,418)	(1,570)	(1,383)
<b>Net change in plan fiduciary net position</b>	<b>\$ 89,015</b>	<b>\$ 141,193</b>	<b>\$ (68,569)</b>	<b>\$ 151,863</b>
<b>Plan fiduciary net position - beginning</b>	<b><u>1,651,375</u></b>	<b><u>1,510,182</u></b>	<b><u>1,578,751</u></b>	<b><u>1,426,888</u></b>
<b>Plan fiduciary net position - ending</b>	<b><u>\$ 1,740,390</u></b>	<b><u>\$ 1,651,375</u></b>	<b><u>\$ 1,510,182</u></b>	<b><u>\$ 1,578,751</u></b>
<b>Net pension liability - ending</b>	<b><u>\$ 521,353</u></b>	<b><u>\$ 564,447</u></b>	<b><u>\$ 1,394,281</u></b>	<b><u>\$ 1,168,358</u></b>
<b>Plan fiduciary net position as a percentage of the TPL</b>	76.95%	74.53%	52.00%	57.47%
<b>Covered payroll</b>	\$ 196,445	\$ 174,963	\$ 164,575	\$ 163,477
<b>Net pension liability as a percentage of covered payroll</b>	265.39%	322.61%	847.20%	714.69%

*Amounts in Thousands*

\* Includes a one-time amount to pay off the remaining liability of the 2007 Early Retirement Incentive Program (ERIP).

**CITY OF CINCINNATI RETIREMENT SYSTEM  
GASB 67 AND 68 REPORTING FOR JUNE 30, 2021 MEASUREMENT DATE**

**SECTION VI – REQUIRED SUPPLEMENTARY INFORMATION**

If an Actuarially Determined Contribution (ADC) is defined, a schedule of the last 10 years of these amounts compared to the actual amount contributed should be disclosed. An ADC is a contribution amount determined in accordance with Actuarial Standards of Practice.

<b>Schedule of Employer Contributions</b>					
	<b>FYE 2021</b>	<b>FYE 2020</b>	<b>FYE 2019</b>	<b>FYE 2018</b>	<b>FYE 2017</b>
Actuarially Determined Contribution	\$ 67,309	\$ 63,405	\$ 52,709	\$ 48,046	\$ 46,689
Actual Employer Contributions					
City of Cincinnati Financial Reporting Entity	\$ 28,027	\$ 27,879	\$ 27,382	\$ 26,506	\$ 25,221
City of Cincinnati Operating Unit (MSD)	<u>6,398</u>	<u>6,531</u>	<u>6,381</u>	<u>6,080</u>	<u>5,647</u>
Total Actual Employer Contributions	<u>34,425</u>	<u>34,410</u>	<u>33,763</u>	<u>32,586</u>	<u>30,868</u>
Contribution Deficiency/(Excess)	<u>\$ 32,884</u>	<u>\$ 28,995</u>	<u>\$ 18,946</u>	<u>\$ 15,460</u>	<u>\$ 15,821</u>
Covered Payroll	\$ 218,178	\$ 218,451	\$ 215,683	\$ 208,317	\$ 196,445
Contributions as a Percentage of Covered Payroll	15.78%	15.75%	15.65%	15.64%	15.71%
	<b>FYE 2016</b>	<b>FYE 2015</b>	<b>FYE 2014</b>	<b>FYE 2013*</b>	<b>FYE 2012</b>
Actuarially Determined Contribution	\$ 69,939	\$ 75,566	\$ 78,101	\$ 33,500	\$ 49,952
Actual Employer Contributions					
City of Cincinnati Financial Reporting Entity	\$ 21,908	\$ 24,566	\$ 31,484	\$ 13,246	\$ 26,932
City of Cincinnati Operating Unit (MSD)	<u>4,701</u>	<u>4,518</u>	<u>6,256</u>	<u>2,904</u>	<u>6,676</u>
Total Actual Employer Contributions	<u>26,609</u>	<u>29,084</u>	<u>37,740</u>	<u>16,150</u>	<u>33,608</u>
Contribution Deficiency/(Excess)	<u>\$ 43,330</u>	<u>\$ 46,482</u>	<u>\$ 40,361</u>	<u>\$ 17,350</u>	<u>\$ 16,344</u>
Covered Payroll	\$ 174,963	\$ 164,575	\$ 163,477	\$ 77,637	\$ 167,148
Contributions as a Percentage of Covered Payroll	15.21%	17.67%	23.09%	20.80%	20.11%

*Amounts in Thousands*

*\*2013 represents the short period covering January 1, 2013 to June 30, 2013 when the City changed reporting periods. 2012 and prior years represent calendar year reporting methods.*

The notes below summarize the key methods and assumptions used to determine the ADC for FYE June 30, 2021.

**Notes to Schedule**

The ADC rates are determined as of December 31, eighteen months prior to the end of the fiscal year in which contributions are reported (as of December 31, 2019 for the fiscal year ending June 30, 2021 contributions).

**Key Methods and Assumptions Used to Determine Contribution Rates**

Actuarial Cost Method:	Entry Age Normal Cost Method
Asset Valuation Method:	5-year Smoothed Value
Amortization Method:	30 Years; Open

**CITY OF CINCINNATI RETIREMENT SYSTEM  
GASB 67 AND 68 REPORTING FOR JUNE 30, 2021 MEASUREMENT DATE**

**SECTION VI – REQUIRED SUPPLEMENTARY INFORMATION**

Key Methods and Assumptions Used to Determine Contribution Rates (continued)

Discount Rate	7.5%, net of pension plan investment expenses
Amortization Growth Rate:	0.00% (Level Dollar)
Inflation:	2.75%
Salary Increases:	3.75% to 7.50%
Mortality:	Active Members: RP-2014 Employees Mortality Table with generational mortality improvement projections using scale MP-2017
	Healthy Inactive Members: RP-2014 Mortality Table with generational mortality improvement projections using scale MP-2017, set forward 2 years for both males and females
	Disabled Inactive Members: RP-2014 Disabled Retiree Mortality Table with generational mortality improvement projections using scale MP-2017

A complete description of the methods and assumptions used to determine contribution rates for the year ending June 30, 2021 can be found in the December 31, 2019 valuation report.

**CITY OF CINCINNATI RETIREMENT SYSTEM  
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**SECTION VII – EMPLOYER REPORTING AMOUNTS**

The employer was required to implement GASB 68 for its reporting date of June 30, 2015. At that time, the employer elected to use the 2014 measurement date for its 2015 reporting. As a result, the schedules in this section will be used by the employer for its June 30, 2022 reporting.

The impact of experience gains or losses and assumption changes on the TPL are recognized in expense over the average expected remaining service life of all active and inactive members of the System. As of the beginning of the measurement period, this recognition period was 1.91 years.

During the year, there was an experience loss of \$85,273 thousands. Of that loss, \$44,646 thousands was recognized as an increase in pension expense in the current year, and the balance (\$40,627 thousands) will be recognized next year, resulting in a deferred outflow of resources as of June 30, 2021 of \$40,627 thousands. The unrecognized amounts due to experience from the prior years was a net experience loss of \$13,090 thousands of which \$13,090 thousands was recognized as an increase in pension expense in the current year, leaving a deferred outflow of resources as of June 30, 2021 of \$0 thousands for these prior year amounts.

Any Plan changes that resulted in an increase or decrease in the TPL are recognized immediately. The City implemented an Early Retirement Incentive Program which resulted in any increase in the TPL of 24,407.

As a result of the depletion test, the discount rate used in measuring the TPL was increased from 3.56% to 7.50%. This change decreased liabilities by \$1,395,498 thousands. Of this amount, \$730,627 thousands was recognized as a decrease in pension expense in the current measurement year, and the balance will be recognized next year, resulting in a deferred inflow of resources as of the June 30, 2021 measurement date of \$664,871 thousands. Unrecognized amounts due to the assumption changes in the prior year totaled \$390,960 thousands of which \$390,960 thousands was recognized as an increase in pension expense in the current measurement year, leaving a deferred outflow of resources of \$0 thousands as of the June 30, 2021 measurement date.

The impact of investment gains or losses is recognized over a period of five years. During the measurement year, there was an investment gain of \$365,368 thousands. Of this gain, \$73,074 thousands were recognized in the current measurement year. A net unrecognized investment loss from the four prior years was \$123,638 thousands of which \$18,574 thousands was recognized as an increase in pension expenses in the current measurement year. The combination of the unrecognized investment gain this year and unrecognized net investment losses from prior periods result in a deferred inflow of resources as of the June 30, 2021 measurement date of \$187,230 thousands.

The table on the following page summarizes the current balances of deferred outflows and deferred inflows of resources along with the net recognition over the next five years.



**CITY OF CINCINNATI RETIREMENT SYSTEM  
GASB 67 AND 68 REPORTING FOR JUNE 30, 2021 MEASUREMENT DATE**

**SECTION VII – EMPLOYER REPORTING AMOUNTS**

<b>Schedule of Deferred Inflows and Outflows of Resources</b>																				
	<b>Deferred Outflows of Resources</b>	<b>Deferred Inflows of Resources</b>																		
Differences between expected and actual experience	\$ 40,627	\$ 0																		
Changes in assumptions	0	664,871																		
Net difference between projected and actual earnings on pension plan investments	0	187,230																		
<b>Total</b>	<b><u>\$ 40,627</u></b>	<b><u>\$ 852,101</u></b>																		
<p>Amounts reported as deferred outflows and deferred inflows of resources will be recognized in pension expense as follows:</p> <p style="text-align: center;"><b>Measurement year ended June 30:</b></p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding-right: 20px;">2022</td> <td style="padding-right: 10px;">\$</td> <td style="text-align: right;">(660,750)</td> </tr> <tr> <td>2023</td> <td></td> <td style="text-align: right;">(33,660)</td> </tr> <tr> <td>2024</td> <td></td> <td style="text-align: right;">(43,992)</td> </tr> <tr> <td>2025</td> <td></td> <td style="text-align: right;">(73,072)</td> </tr> <tr> <td>2026</td> <td></td> <td style="text-align: right;">0</td> </tr> <tr> <td>Thereafter</td> <td style="padding-right: 10px;">\$</td> <td style="text-align: right;">0</td> </tr> </table>			2022	\$	(660,750)	2023		(33,660)	2024		(43,992)	2025		(73,072)	2026		0	Thereafter	\$	0
2022	\$	(660,750)																		
2023		(33,660)																		
2024		(43,992)																		
2025		(73,072)																		
2026		0																		
Thereafter	\$	0																		

*Amounts in Thousands*

The table on the following page shows the details of the inflows and outflows shown in the table above.

**CITY OF CINCINNATI RETIREMENT SYSTEM  
GASB 67 AND 68 REPORTING FOR JUNE 30, 2021 MEASUREMENT DATE**

**SECTION VII – EMPLOYER REPORTING AMOUNTS**

<b>Recognition of Experience (Gains) and Losses</b>												
Experience Year	Recognition Period	Total Amount	Beginning	Ending	Recognition Year							
			Remaining Amount	Remaining Amount	2021	2022	2023	2024	2025	2026	Thereafter	
2021	1.91	\$ 85,273	\$ 85,273	\$ 40,627	\$ 44,646	\$ 40,627	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
2020	1.96	26,726	13,090	0	13,090	0	0	0	0	0	0	0
Deferred Outflows			98,363	40,627	57,736	40,627	0	0	0	0	0	0
Deferred (Inflows)			0	0	0	0	0	0	0	0	0	0
Net Change in Pension Expense			\$ 98,363	\$ 40,627	\$ 57,736	\$ 40,627	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0

*Amounts in Thousands*

<b>Recognition of Assumption Changes</b>												
Change Year	Recognition Period	Total Amount	Beginning	Ending	Recognition Year							
			Remaining Amount	Remaining Amount	2021	2022	2023	2024	2025	2026	Thereafter	
2021	1.91	\$ (1,395,498)	\$ (1,395,498)	\$ (664,871)	\$ (730,627)	\$ (664,871)	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
2020	1.96	798,211	390,960	0	390,960	0	0	0	0	0	0	0
Deferred Outflows			390,960	0	390,960	0	0	0	0	0	0	0
Deferred (Inflows)			(1,395,498)	(664,871)	(730,627)	(664,871)	0	0	0	0	0	0
Net Change in Pension Expense			\$ (1,004,538)	\$ (664,871)	\$ (339,667)	\$ (664,871)	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0

*Amounts in Thousands*

**CITY OF CINCINNATI RETIREMENT SYSTEM  
 GASB 67 AND 68 REPORTING FOR JUNE 30, 2021 MEASUREMENT DATE**

**SECTION VII – EMPLOYER REPORTING AMOUNTS**

Recognition of Investment (Gains) and Losses											
Experience Year	Recognition Period	Total Amount	Beginning Remaining Amount	Ending Remaining Amount	Recognition Year						
					2021	2022	2023	2024	2025	2026	Thereafter
2021	5.00	\$ (365,368)	\$ (365,368)	\$ (292,294)	\$ (73,074)	\$ (73,074)	\$ (73,074)	\$ (73,074)	\$ (73,072)	\$ 0	\$ 0
2020	5.00	145,414	116,331	87,248	29,083	29,083	29,083	29,082	0	0	0
2019	5.00	51,651	30,991	20,661	10,330	10,330	10,331	0	0	0	0
2018	5.00	(14,229)	(5,691)	(2,845)	(2,846)	(2,845)	0	0	0	0	0
2017	5.00	(89,957)	(17,993)	0	(17,993)	0	0	0	0	0	0
Net Change in Pension Expense			\$ (241,730)	\$ (187,230)	\$ (54,500)	\$ (36,506)	\$ (33,660)	\$ (43,992)	\$ (73,072)	\$ 0	\$ 0

*Amounts in Thousands*

**CITY OF CINCINNATI RETIREMENT SYSTEM  
GASB 67 AND 68 REPORTING FOR JUNE 30, 2021 MEASUREMENT DATE**

**SECTION VII – EMPLOYER REPORTING AMOUNTS**

The annual pension expense recognized by the employer can be calculated in two different ways. First, it is the change in the amounts reported on the employer’s Statement of Net Position that relate to the Cincinnati Retirement System and are not attributable to employer contributions. That is, it is the change in NPL plus the changes in deferred outflows and inflows plus employer contributions.

Alternatively, annual pension expense can be calculated by its individual components. While GASB does not require or suggest the organization of the individual components shown in the table below, we believe it helps to understand the level and volatility of pension expense.

<b>Calculation of Pension Expense</b>		
	<b>Measurement Year Ending</b>	
	<b>2021</b>	<b>2020</b>
Change in Net Pension Liability	\$ (1,622,371)	\$ 993,291
Change in Deferred Outflows	487,061	(208,945)
Change in Deferred Inflows	852,101	0
Employer Contributions	<u>34,425</u>	<u>34,410</u>
<b>Pension Expense</b>	<b>\$ (248,784)</b>	<b>\$ 818,756</b>
<b>Pension Expense as % of Payroll</b>	<b>(114.03%)</b>	<b>374.80%</b>
<b>Operating Expenses</b>		
Service cost	\$ 61,020	\$ 37,451
Employee contributions	(20,025)	(19,892)
Administrative expenses	<u>1,799</u>	<u>1,868</u>
Total	\$ 42,794	\$ 19,427
<b>Financing Expenses</b>		
Interest cost	\$ 133,779	\$ 162,407
Expected return on assets	<u>(113,333)</u>	<u>(124,484)</u>
Total	\$ 20,446	\$ 37,923
<b>Changes</b>		
Benefit changes	\$ 24,407	\$ 0
Recognition of assumption changes	(339,667)	678,216
Recognition of liability gains and losses	57,736	38,488
Recognition of investment gains and losses	<u>(54,500)</u>	<u>44,702</u>
Total	\$ (312,024)	\$ 761,406
<b>Pension Expense</b>	<b>\$ (248,784)</b>	<b>\$ 818,756</b>

*Amounts in Thousands*

**CITY OF CINCINNATI RETIREMENT SYSTEM  
GASB 67 AND 68 REPORTING FOR JUNE 30, 2021 MEASUREMENT DATE**

**SECTION VII – EMPLOYER REPORTING AMOUNTS**

First, there are components referred to as operating expenses. These are items directly attributable to the operation of the Plan during the measurement year. Service cost less employee contributions represents the increase in employer-provided benefits attributable to the year, and administrative expenses are the cost of operating CRS for the year.

Second, there are the financing expenses: the interest on the Total Pension Liability less the expected return on assets.

The final category is changes. This category will drive most of the volatility in pension expense from year to year. It includes any changes in benefits made during the year and the recognized amounts due to assumption changes, gains or losses on the TPL, and investment gains or losses.

**CITY OF CINCINNATI RETIREMENT SYSTEM  
GASB 67 AND 68 REPORTING FOR JUNE 30, 2021 MEASUREMENT DATE**

**APPENDIX A – MEMBERSHIP INFORMATION**

The data for this valuation was provided electronically by the Cincinnati Retirement System staff. Cheiron did not perform a formal audit of the data. However, we did perform checks of the data for reasonableness and consistency in accordance with Actuarial Standards of Practice No. 23 – Data Quality.

Data reported in this Appendix is as of December 31, 2020.

**CITY OF CINCINNATI RETIREMENT SYSTEM  
GASB 67 AND 68 REPORTING FOR JUNE 30, 2021 MEASUREMENT DATE**

**APPENDIX A – MEMBERSHIP INFORMATION**

**Status Reconciliation of Participating Members**

Status Reconciliation of Participating Members							
	Active Full-Time	Active Part-Time	Terminated Vested	Retired	Disabled	Beneficiary	Total
As of December 31, 2019	2,903	1,143	225	3,507	153	616	8,547
New Hires	146	291					437
To Active Part-Time	(26)	26					0
To Active Full-Time	40	(40)					0
Terminated Vested	(14)	(6)	20				0
Terminated Non-Vested	(74)	(336)					(410)
Refund of Contributions							0
Retired	(337)		(9)	346			0
Disabled	(1)				1		0
Deceased with Beneficiary				(22)	(1)	23	0
Deceased without Beneficiary			(17)	(150)	(12)	(62)	(241)
Miscellaneous Changes	(6)		3	33	1	26	57
As of December 31, 2020	2,631	1,078	222	3,714	142	603	8,390

Not included in the counts above are 9,234 and 8,913 inactive participants as of December 31, 2020 and 2019, respectively. These are former employees who have an employee account balance but are not otherwise vested in an employer-provided benefit. Included in the retired counts above are 234 and 222 members as of December 31, 2020 and 2019 currently participating in DROP.

**CITY OF CINCINNATI RETIREMENT SYSTEM  
GASB 67 AND 68 REPORTING FOR JUNE 30, 2021 MEASUREMENT DATE**

**APPENDIX A – MEMBERSHIP INFORMATION**

Active Member Count by Age and Service as of December 31, 2020										
Age	Years of Service									Total Count
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over	
Under 25	31	8	0	0	0	0	0	0	0	39
25-29	141	34	8	0	0	0	0	0	0	183
30-34	171	82	39	5	0	0	0	0	0	297
35-39	130	106	73	57	10	0	0	0	0	376
40-44	121	81	58	54	40	5	0	0	0	359
45-49	98	58	72	71	72	18	0	0	0	389
50-54	57	68	67	81	82	54	8	0	0	417
55-59	47	50	39	59	68	55	27	4	0	349
60-64	24	29	28	29	26	17	13	1	1	168
65-69	9	9	5	6	8	1	4	1	0	43
70 & Over	0	1	0	3	1	2	1	0	3	11
<b>Total Count</b>	<b>829</b>	<b>526</b>	<b>389</b>	<b>365</b>	<b>307</b>	<b>152</b>	<b>53</b>	<b>6</b>	<b>4</b>	<b>2,631</b>

Average Service: 11.6



**CITY OF CINCINNATI RETIREMENT SYSTEM  
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**APPENDIX A – MEMBERSHIP INFORMATION**

Average Compensation of Active Members by Age and Service as of December 31, 2020											
Age	Years of Service									Avg. Comp.	
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Over		
Under 25	\$52,737	\$48,883	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$51,947
25-29	61,759	58,011	57,709	0	0	0	0	0	0	0	60,886
30-34	68,152	65,508	68,211	62,260	0	0	0	0	0	0	67,331
35-39	71,578	69,636	74,892	62,945	69,412	0	0	0	0	0	70,308
40-44	65,383	71,036	69,672	75,280	77,348	71,340	0	0	0	0	70,256
45-49	69,782	71,430	81,949	77,538	75,228	79,241	0	0	0	0	75,141
50-54	72,038	68,682	76,601	71,842	78,046	81,982	81,210	0	0	0	74,831
55-59	74,159	74,151	72,651	71,012	72,151	77,232	73,931	79,985	0	0	73,599
60-64	82,475	68,527	73,611	70,202	64,534	80,030	78,676	53,398	110,048	0	73,144
65-69	66,070	71,408	67,363	78,357	63,361	99,049	54,134	126,229	0	0	69,604
70 & Over	0	51,311	0	55,950	75,407	71,509	69,394	0	89,676	0	70,546
Average	67,814	68,579	74,277	71,650	74,172	79,345	74,614	83,261	94,769	0	71,200

**CITY OF CINCINNATI RETIREMENT SYSTEM  
 GASB 67 AND 68 REPORTING FOR JUNE 30, 2021 MEASUREMENT DATE**

**APPENDIX A – MEMBERSHIP INFORMATION**

<b>Summary of Inactive Membership Data as of December 31, 2020</b>				
<b>Group</b>	<b>Count</b>	<b>Total Annual Benefit</b>		<b>Average Annual Benefit</b>
Retirees	3,714	\$	165,608,427	\$ 44,590
Disableds	142	\$	2,706,901	\$ 19,063
Survivor	<u>603</u>	\$	<u>15,510,754</u>	<u>\$ 25,723</u>
Total	4,459	\$	183,826,082	\$ 41,226

**CITY OF CINCINNATI RETIREMENT SYSTEM  
GASB 67 AND 68 REPORTING FOR JUNE 30, 2021 MEASUREMENT DATE**

**APPENDIX A – MEMBERSHIP INFORMATION**

<b>Annual Benefits by Age as of December 31, 2020</b>				
<b>Attained Age</b>	<b>Number of Members</b>	<b>Total Annual Benefits</b>		<b>Average Annual Benefit</b>
< 40	4	\$	116,347	\$ 29,087
40 - 44	1		22,682	22,682
45 - 49	20		698,062	34,903
50 - 54	148		6,511,689	43,998
55 - 59	386		17,084,865	44,261
60 - 64	759		31,914,669	42,048
65 - 69	956		41,365,217	43,269
70 - 74	872		37,667,017	43,196
75 - 79	501		20,159,719	40,239
80 - 84	404		15,521,818	38,420
85 - 89	243		7,990,288	32,882
90 - 94	127		3,901,054	30,717
95 - 99	32		799,518	24,985
100+	6		73,137	12,190
<b>Total</b>	<b>4,459</b>	<b>\$</b>	<b>183,826,082</b>	<b>\$ 41,226</b>

**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

**A. Actuarial Assumptions**

*Rationale for Economic and Demographic Assumptions*

The actuarial assumptions were adopted by the Board of Trustees on March 1, 2018 upon the recommendation of the prior actuary, based on an experience study performed for the period January 1, 2012 to December 31, 2016. The results of this study were presented in a report dated February 27, 2018 and are incorporated into this report by reference. An investment return assumption of 7.50% was used as prescribed by item 29 of the Collaborative Settlement Agreement (CSA) signed October 5, 2015.

Cheiron has reviewed the assumptions. While we consider these assumptions to be generally reasonable, we have not yet performed our own actuarial experience study.

**1. Discount Rate / Expected Return on Assets**

7.50% per year, net of investment expenses

**2. Single Equivalent Discount Rate for GASB 67/68**

7.50% per annum, 3.56% prior year

**3. Inflation Assumption**

2.75% per annum

**4. Expenses**

Estimated budgeted administrative expenses of 0.80% of payroll are added to the normal cost rate

**5. Salary Increases**

Salary increases are assumed to vary by service. Representative rates are as follows:

Service	Annual Increase
0	7.50%
5	5.00
10	4.50
15	4.00
21+	3.75

**6. Mortality Rates**

Active Members: RP-2014 Employees Mortality Table with generational projections using scale MP-2017.

Healthy Inactive Members: RP-2014 Mortality Table with generational projections using Scale MP-2017, set forward 2 years for both males and females.

Disabled Inactive Members: RP-2014 Disabled Retiree Mortality Table with generational projections using scale MP-2017.

**CITY OF CINCINNATI RETIREMENT SYSTEM  
GASB 67 AND 68 REPORTING FOR JUNE 30, 2021 MEASUREMENT DATE**

**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

**7. Retirement Rates**

Age	Annual Rates of Retirement Groups C, E, and F <sup>1</sup>				
	5 Years of Service	6 – 24 Years of Service	25 – 29 Years of Service	30 Years of Service	31+ Years of Service
50-54				55.0%	30.0%
55			6.0%	55.0	30.0
56			8.0	55.0	30.0
57			10.0	55.0	30.0
58			10.0	55.0	30.0
59			10.0	55.0	30.0
60	25.0%	25.0%	25.0	55.0	25.0
61	25.0	18.0	18.0	55.0	25.0
62	25.0	18.0	18.0	55.0	25.0
63	25.0	18.0	18.0	55.0	25.0
64	25.0	18.0	18.0	55.0	25.0
65	25.0	18.0	18.0	55.0	25.0
70	100.0	100.0	100.0	100.0	100.0

<sup>1</sup> For purposes of valuing CSA Employee members eligible for DROP benefits, an additional 10% is added to rates for 30 years of service and an additional 5% is added to rates for 31+ years of service

Age	Annual Rates of Retirement Group G				
	5 Years of Service	6 – 14 Years of Service	15 – 29 Years of Service	30 Years of Service	31+ Years of Service
57			6.0%	6.0%	6.0%
58			6.0	6.0	6.0
59			8.0	8.0	8.0
60			8.0	8.0	8.0
61			10.0	10.0	10.0
62			10.0	25.0	25.0
63			10.0	25.0	18.0
64			10.0	25.0	18.0
65			10.0	25.0	18.0
66			10.0	25.0	18.0
67	25.0%	25.0%	25.0	25.0	18.0
68	25.0	18.0	18.0	18.0	18.0
69	25.0	18.0	18.0	18.0	18.0
70	100.0	100.0	100.0	100.0	100.0

**CITY OF CINCINNATI RETIREMENT SYSTEM  
GASB 67 AND 68 REPORTING FOR JUNE 30, 2021 MEASUREMENT DATE**

**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

**8. Termination Rates**

Sample termination rates are as follows:

Age	Annual Rates of Termination			
	<1 Year of Service	1 – 2 Years of Service	3 – 4 Years of Service	5+ Years of Service
20	22.00%	10.00%	8.00%	4.00%
25	22.00	10.00	8.00	4.00
30	22.00	10.00	8.00	4.00
35	22.00	10.00	4.00	4.00
40	22.00	10.00	4.00	2.75
45	22.00	10.00	4.00	1.25
50	22.00	10.00	4.00	1.25
55	22.00	10.00	4.00	1.25
60	22.00	10.00	4.00	1.25
65	22.00	10.00	4.00	1.25
70	22.00	10.00	4.00	1.25

60% of vested members who terminate elect to leave their contributions in the plan in order to be eligible for a benefit at their normal retirement; 40% of members elect to withdraw their contributions.

**9. Disability Rates**

Sample disability rates are as follows:

Age	Annual Rates of Disability <sup>1</sup>
20	0.005%
25	0.010%
30	0.015%
35	0.025%
40	0.045%
45	0.075%
50	0.135%
55	0.210%
60	0.250%
65	0.250%

<sup>1</sup> Rates are 0% when a member is eligible for normal retirement

**CITY OF CINCINNATI RETIREMENT SYSTEM  
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**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

**10. Part-time Active Members**

All part-time active members are assumed to receive a refund of their employee contributions with interest upon leaving the System.

**11. DROP Participation**

60% of eligible CSA Employee members eligible for DROP benefits are assumed to decline participation and 40% are assumed to elect participation. Those electing to participate are assumed to remain in DROP for three years.

**12. DROP Crediting Rate**

3.25% per annum

**13. Percent Married**

80% of members are assumed to be married for the purpose of valuing pre-retirement survivor benefits.

**14. Spouse Age Difference**

Unless otherwise reported in the data, the male spouse is assumed to be three-years-older than the female spouse.

**15. New Entrant Assumptions for Projections**

For purposes of projecting total payroll, the active population was assumed to remain stable with decrementing actives assumed to be replaced by new entrants hired at the following ages (based on observed experience in the census data):

Hire Age	Percent Male	Percent Female
20	5.0%	5.0%
25	10.0%	7.5%
30	10.0%	10.0%
35	7.5%	7.5%
40	7.5%	5.0%
45	5.0%	5.0%
50	<u>10.0%</u>	<u>5.0%</u>
<b>Total</b>	<b>55.0%</b>	<b>45.0%</b>

Using the census data, average salaries for new hires was assumed to be \$62,000 indexed with general wage inflation of 3.75% per year for future years.

**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

**B. Methods**

**1. Actuarial Funding Method**

The funding method for the valuation of liabilities used for this valuation is the Entry Age Normal (EAN) method. Under this funding method, a normal cost rate is determined as a level percentage of pay for each active member. The normal cost rate multiplied by payroll equals the total normal cost for each member. The normal cost contributions (Employer and Member) will pay for projected benefits at retirement for each active member.

The actuarial liability is the difference between the present value of future benefits and the present value of future normal costs. The difference between this actuarial liability and the actuarial value of assets is the unfunded actuarial liability (UAL).

The portion of the actuarial liability in excess of plan assets, the UAL, is amortized to develop an additional cost that is added to each year's employer normal cost. Under this funding method, actuarial gains and losses are directly reflected in the size of the unfunded actuarial liability. The amortization method is described below.

**2. Amortization Method**

The actuarially determined contribution (ADC) is determined as the sum of (a) the employer normal cost rate, (b) the administrative expense rate, and (c) the UAL rate. Based on the Board's funding benchmark, the UAL rate represents the amount necessary to amortize the UAL (excluding liabilities due to the ERIP) over a 30-year open period as a level dollar amount. If the City were to contribute based on the ADC, the unfunded liability would not be expected to be fully paid off based on the open 30-year amortization period.

In addition, the City is paying for the Early Retirement Incentive Program in 15 level annual amounts beginning January 1, 2022.

**3. Actuarial Value of Assets**

The actuarial value of assets recognizes a portion of the difference between the actual market value of assets and the expected market value of assets, based on the assumed valuation rate of return. The amount recognized each year is 20% of the difference between actual market value and expected market value. In addition, the actuarial value of assets cannot be less than 80%, or more than 120%, of the market value of assets.

**4. Valuation Software**

Cheiron utilizes ProVal, an actuarial valuation software leased from Winklevoss Technologies (WinTech) to calculate the liabilities, normal costs, and projected benefit payments. We have relied on WinTech as the developer of ProVal. We have reviewed ProVal and have a basic understanding of it and have used ProVal in accordance with its



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**APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS**

original intended purpose. We have not identified any material inconsistencies in assumptions or output of ProVal that would affect this actuarial valuation.

**5. Projection Model**

We have used Cheiron's *P-Scan* model to project contributions and assets for the purpose of determining the GASB 67/68 discount rate.

The *P-Scan* deterministic projection uses standard roll-forward techniques that implicitly assumes a stable active population. Changes in the demographic characteristics of the active population will lead to different results.

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**APPENDIX C – SUMMARY OF PLAN PROVISIONS**

**1. Membership**

All employees of the City of Cincinnati shall be members of the System except for the following:

- Members of the Police and Fireman’s Disability and Pension Fund of Ohio,
- Elected City officials,
- Employees for whom the City contributes to the Ohio Public Employees Retirement System,
- Members of the faculties, teaching staffs, research staffs, and administrative staff of the University of Cincinnati appointed to positions covered by the Teachers Insurance and Annuity Association Social Security Plan,
- Persons becoming employees after June 1, 1961, who are employed in any of the following employment classifications: bricklayer, carpenter, carpenter foreman, cement finisher, electrician, electrician foreman, painter, painter foreman, plasterer, plumber, sign painter, steamfitter, and pipefitter, tinsmith, or composition roofer,
- Persons hired as police recruits who are not currently enrolled as a member of the System prior to their date of hire, and
- Current contributing members of the Ohio School Employees Retirement System (SERS) or the Ohio State Teachers Retirement System (STRS) who are hired by the City on a seasonal, temporary, or part-time basis.

Members of the System are divided into the following groups:

Group	Criteria
A, B	Any member who has retired prior to 7/1/2011
C	Any member who, as of June 30, 2011, was an active or deferred vested member and had either: a) Completed at least 30 years of service, or b) Reached age 60 and completed at least 5 years of service
D	Any active member who, between July 1, 2011 and December 31, 2013: 1) Either a) Completed at least 30 years of service, or b) Reached age 60 and completed at least 5 years of service; and 2) Retired prior to January 1, 2014
E	Any active member who: 1) Between July 1, 2011 and December 31, 2013 either: a) Completed at least 30 years of service, or b) Reached age 60 and completed at least 5 years of service; and 2) Retires on or after January 1, 2014.

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**APPENDIX C – SUMMARY OF PLAN PROVISIONS**

Group	Criteria
F	<p>Any active member whose most recent membership enrollment date was prior to January 1, 2010 and who is not in groups A through E.</p> <p>Any deferred vested member whose most recent membership enrollment date was prior to January 1, 2010, is not in groups A through E, and has at least five years of service prior to the date separated from employment.</p>
G	<p>Any member whose most recent membership enrollment date is on or after January 1, 2010, or</p> <p>Any member rehired on or after January 1, 2010, who has fewer than five years of service as of June 30, 2011, or</p> <p>Any retiree of the System who is receiving service retirement allowance and is re-employed on or after April 1, 2013.</p>

Members in the System are further classified as follows:

Class	Criteria
CSA Retiree (CSA participants corresponding to Retirees Class)	Group A and B members and their designated optionees
CSA Employee (CSA participants corresponding to Current Employees Class)	Group C, D, E, and F members (and their designated optionees) that were vested and employed on July 1, 2011
CMC Employee (Non-CSA participants)	Group E and F members (and their designated optionees) that were either vested or employed on July 1, 2011 and no break in employment service since January 1, 2010 and prior to becoming vested
Non-CSA	Group G members and their designated optionees

**2. Service Retirement Benefit**

***Groups A, B, C, and D***

Normal Retirement Eligibility      Age 60 with 5 years of service or 30 years of service

Early Retirement Eligibility      Age 55 with 25 years of service

Benefit Formula Multiplier      Members hired prior to July 12, 1998 were given a one-time irrevocable option to choose either the benefit formula using a 2.22% multiplier or the benefit formula using a 2.50% multiplier. For members hired on or after July 12, 1998, benefits are calculated using a 2.50% multiplier.

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**APPENDIX C – SUMMARY OF PLAN PROVISIONS**

Average Highest Compensation	Average of the highest three consecutive years of compensation
Years of Service	Years or fractional years of full-time service rendered to the plan sponsor
Benefit	<p>a) An annuity that is actuarially equivalent to the accumulated contributions of the member at the time of retirement.</p> <p>b) A pension which together with the annuity produces a total annual retirement allowance equal to the product of the applicable benefit formula multiplier, the member's average highest compensation, and the number of years of service.</p> <p>Early Retirement Benefit is actuarially reduced from normal retirement age.</p>

***Group E***

Normal Retirement Eligibility    Age 60 with 5 years of service or 30 years of service

Early Retirement Eligibility    Age 55 with 25 years of service

Retirement benefit is composed of as many as three components:

*Part A Benefit*

For service earned through December 31, 2013

*Part B Benefit*

For service earned on and after January 1, 2014 up to a combined (Part A and Part B) 20 years of service

*Part C Benefit*

For service earned on and after January 1, 2014 in excess of a combined (Part A and Part B) 20 years of service

Benefit Formula Multiplier

*Part A Benefit*

Members hired prior to July 12, 1998 were given a one-time irrevocable option to choose either the benefit formula using a 2.22% multiplier or the benefit formula using a 2.50% multiplier. For members hired on or after July 12, 1998, benefits are calculated using a 2.50% multiplier.

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**APPENDIX C – SUMMARY OF PLAN PROVISIONS**

*Part B Benefit*

Members hired prior to July 12, 1998 were given a one-time irrevocable option to choose either the benefit formula using a 2.22% multiplier or the benefit formula using a 2.50% multiplier. For members hired on or after July 12, 1998, benefits are calculated using a 2.50% multiplier.

*Part C Benefit*

2.20% multiplier

Average Highest Compensation

*Part A Benefit*

Average of the highest three consecutive years of compensation

*Part B Benefit*

Average of the highest five consecutive years of compensation

*Part C Benefit*

Average of the highest five consecutive years of compensation

Years of Service

Years or fractional years of full-time service rendered to the plan sponsor

Benefit

a) An annuity that is actuarially equivalent to the accumulated contributions of the member at the time of retirement.

b) A pension which together with the annuity produces a total annual retirement allowance equal to the sum of Part A, Part B, and Part C benefits each of which is the product of the applicable benefit formula multiplier, the applicable average highest compensation, and the applicable number of years of service.

Early Retirement Benefit is actuarially reduced from normal retirement age.

***Group F***

Normal Retirement Eligibility      Age 60 with 5 years of service or 30 years of service

Early Retirement Eligibility      Age 55 with 25 years of service

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**APPENDIX C – SUMMARY OF PLAN PROVISIONS**

Retirement benefit is composed of as many as three components:

*Part A Benefit*

For service earned through June 30, 2011

*Part B Benefit*

For service earned on and after July 1, 2011 up to a combined (Part A and Part B) 20 years of service

*Part C Benefit*

For service earned on and after July 1, 2011 in excess of a combined (Part A and Part B) 20 years of service

Benefit Formula Multiplier

*Part A Benefit*

Members hired prior to July 12, 1998 were given a one-time irrevocable option to choose either the benefit formula using a 2.22% multiplier or the benefit formula using a 2.50% multiplier. For members hired on or after July 12, 1998, benefits are calculated using a 2.50% multiplier.

*Part B Benefit*

Members hired prior to July 12, 1998 were given a one-time irrevocable option to choose either the benefit formula using a 2.22% multiplier or the benefit formula using a 2.50% multiplier. For members hired on or after July 12, 1998, benefits are calculated using a 2.50% multiplier.

*Part C Benefit*

2.20% multiplier

Average Highest Compensation

*Part A Benefit*

Average of the highest three consecutive years of compensation

*Part B Benefit*

Average of the highest five consecutive years of compensation

*Part C Benefit*

Average of the highest five consecutive years of compensation

Years of Service

Years or fractional years of full-time service rendered to the plan sponsor

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**APPENDIX C – SUMMARY OF PLAN PROVISIONS**

Benefit	<p>a) An annuity that is actuarially equivalent to the accumulated contributions of the member at the time of retirement.</p> <p>b) A pension which together with the annuity produces a total annual retirement allowance equal to the sum of Part A, Part B, and Part C benefits each of which is the product of the applicable benefit formula multiplier, the applicable average highest compensation, and the applicable number of years of service.</p> <p>Early Retirement Benefit is actuarially reduced from normal retirement age.</p>
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***Group G***

Normal Retirement Eligibility	Age 67 with 5 years of service or age 62 with 30 years of service
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Early Retirement Eligibility	Age 57 with 15 years of service
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Benefit Formula Multiplier	Benefit is calculated using a 2.20% multiplier for all years of service up to 30 years and a 2.00% multiplier for all service in excess of 30 years.
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Average Highest Compensation	Average of the highest five consecutive years of compensation
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Years of Service	Years or fractional years of full-time service rendered to the plan sponsor
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Benefit	<p>a) An annuity that is actuarially equivalent to the accumulated contributions of the member at the time of retirement.</p> <p>b) A pension which together with the annuity produces a total annual retirement allowance equal to the product of the applicable benefit formula multiplier, the member's average highest compensation, and the number of years of service.</p> <p>Early Retirement Benefit is actuarially reduced from normal retirement age.</p>
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**APPENDIX C – SUMMARY OF PLAN PROVISIONS**

*All Groups*

In no event shall the retirement allowance be greater than 90% of a member's average highest compensation.

In no event shall the retirement allowance be greater than that permitted by Section 415 of the Internal Revenue Code.

The average highest compensation used in the calculation of benefits depends on which benefit formula applies to the member. The formula that uses the 2.22% multiplier includes overtime compensation and the lump sum payment for unused vacation and sick pay. The formulas that use all other multipliers do not include overtime or the lump sum payment.

**3. Disability Retirement Benefit**

Eligibility	5 years of service
Benefit	90% of normal retirement benefit at disability date but not less than the smaller of: a) 25% of average highest compensation  b) 90% of the retirement benefit the member would have become entitled to had he continued in service to normal retirement age without further change in average highest compensation

**4. Deferred Vested Retirement Benefit**

Eligibility	5 years of service
Benefit	Normal retirement benefit beginning at normal retirement age

**5. Pre-retirement Death Benefit**

- 1) Contributions with interest
- 2) Survivor Benefits according to the type of survivors if the member has at least 18 months of service

**6. Post-retirement Death Benefit**

- 1) \$5,000 lump sum for Groups A and B
- 2) If no Joint and Survivor Option is selected, the balance of member contributions not received back in retirement benefit payments prior to death



APPENDIX C – SUMMARY OF PLAN PROVISIONS

7. Optional Forms of Benefit

- 1) Joint and 100% Survivor Payment
- 2) Joint and 50% Survivor Payment
- 3) 66 2/3% Joint and Survivor Payment
- 4) 80% Joint and Survivor Payment

8. Cost-of-Living Adjustments (COLA)

Groups A and B                      3% simple COLA based on the member's benefit on January 1, 2016, including all previously granted COLAs. Effective January 1, 2016, the COLA will be suspended for a 3-year period.

In the 3<sup>rd</sup> year of the COLA suspension (calendar year 2018), members will receive a one-time payment that is the lesser of 3% of their base pension benefit or \$1,000. This payment will be made on January 1, or the anniversary date of the member's retirement according to when the member normally receives a COLA.

Groups C, D, E, F, and G            3% simple COLA based on the initial gross monthly benefit with a 3-year delay following each member's date of retirement.

Poverty Exception                    Any member of the Retirees Class or Current Employees Class who retired or retires with at least 5 years of service and whose household income is below 150% of federal poverty guidelines will receive a 3% compounding COLA until such time income exceeds 150% of federal poverty guidelines, at which time the member will receive a 3% simple COLA.

9. Contributions

Members                                Each member, commencing January 1, 1978, contributes at a rate of 7.0% of the salary used to compute retirement benefits until retirement. Beginning January 1, 2010, the employee contribution rate was increased by 0.5% per year over 4 years to reach 9.0% of pay. The CSA establishes that the contribution rate for members shall not exceed 9.0% of pay for the term of the agreement.

Employers                                The sponsoring employer makes annual contributions based on members' salaries so that, when members become eligible for benefits, reserves will have been accumulated to provide the pension and other benefits payable by the plan on account of creditable service.

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**APPENDIX C – SUMMARY OF PLAN PROVISIONS**

**10. Deferred Retirement Option Plan (DROP)**

Eligibility	Current Employees Class members with at least 30 years of service
Maximum Participation Period	5 years
Minimum Participation Period	Participation in DROP for less than 2 years results in forfeiture of all interest earnings credited to the member's DROP account
Benefit	Monthly pension benefit is calculated as if the eligible member actually retired on their DROP effective date, including any adjustments for an assigned optionee. The monthly pension benefit will be contributed to the member's DROP account in the CRS Pension Trust and paid out as a lump sum upon termination from the DROP.
Employee Contributions	Members continue to contribute 9.0% of pay while participating in DROP. 75% of the contribution is credited to the member's DROP account and the remaining 25% of the contribution is paid to the CRS Pension Trust to offset the costs of administering the DROP.
Employer Contributions	Employer contributions to the CRS Pension Trust continue to apply in the same manner as for other actively employed members who are not participating in the DROP. Employer contributions are not credited to the member's DROP account.
Interest	DROP account balances are credited each month at a rate equal to the 10-year U.S. Treasury Note Business Day Series adjusted quarterly with a cap of 5% but not less than 0%.

**11. Changes Since Last Valuation**

The City offered an Early Retirement Incentive Program to employees who met the following criteria prior to January 1, 2021: Employees in Groups C, E or F who had at least 28 years of creditable service or, who had at least 5 years of creditable service and reached at least age 60; and employees in Group G who had at least 28 years of creditable service and reached at least age 62 or, who had 5 years of creditable service and reached at least age 67. Part-time employees, rehired retirees and members in DROP were not eligible to participate. Of those eligible, 253 employees elected to participate. The City is funding the increase in liabilities of this program through level annual dollar amounts over 15 years effective January 1, 2022.

**APPENDIX D – GLOSSARY OF TERMS**

**1. Actuarially Determined Contribution**

A target or recommended contribution for the reporting period, determined in conformity with Actuarial Standards of Practice based on the most recent measurement available when the contribution for the reporting period was adopted.

**2. Actuarial Valuation Date**

The date as of which an actuarial valuation is performed. This date may be up to 24 months prior to the measurement date and up to 30 months prior to the employer’s reporting date.

**3. Deferred Inflow of Resources**

An acquisition of net assets by a government employer that is applicable to a future reporting period. In the context of GASB 68, these are experience gains on the Total Pension Liability, assumption changes reducing the Total Pension Liability, or investment gains that are recognized in future reporting periods.

**4. Deferred Outflow of Resources**

A consumption of net assets by a government employer that is applicable to a future reporting period. In the context of GASB 68, these are experience losses on the Total Pension Liability, assumption changes increasing the Total Pension Liability or investment losses that are recognized in future reporting periods.

**5. Entry Age Actuarial Cost Method**

The actuarial cost method required for GASB 67 and 68 calculations. Under this method, the actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit ages. The portion of this actuarial present value allocated to a valuation year is called the Service Cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future service costs is called the Total Pension Liability.

**6. Measurement Date**

The date as of which the Total Pension Liability and Plan Fiduciary Net Position are measured. The Total Pension Liability may be projected from the Actuarial Valuation Date to the Measurement Date. The Measurement Date must be the same as the Reporting Date for the Plan.

**APPENDIX D – GLOSSARY OF TERMS**

**7. Net Pension Liability**

The liability of the employer and non-employer contributing entities for employees for benefits provided through a defined benefit pension plan. It is calculated as the Total Pension Liability less the Plan Fiduciary Net Position.

**8. Plan Fiduciary Net Position**

The fair or market value of assets.

**9. Reporting Date**

The last day of the Plan or employer's fiscal year.

**10. Service Cost**

The portion of the actuarial present value of projected benefit payments that is attributed to the current period of employee service in conformity with the requirements of GASB 67 and 68. The Service Cost is the normal cost calculated under the entry age actuarial cost method.

**11. Total Pension Liability**

The portion of the actuarial present value of projected benefit payments that is attributed to past periods of employee service in conformity with the requirements of GASB 67 and 68. The Total Pension Liability is the actuarial liability calculated under the entry age actuarial cost method.