



# North Dakota Teachers' Fund for Retirement

## Actuarial Valuation as of July 1, 2016

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*Presented By:*

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# Discussion Topics – Valuation and Projections

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**Segal  
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- **Overview of Valuation Process**
- **Summary of Valuation Highlights**
- **Valuation Results and Projections**
- **Actuarial Audit and Update on Public Sector Topics**

# Purposes of the Actuarial Valuation

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- Report the Fund's actuarial assets
- Calculate the Fund's liabilities
- Determine the funding policy Actuarially Determined Contribution (ADC) for fiscal year 2017 and compare to the statutory employer contribution
- Determine the effective amortization period
- Explore the reasons why the current valuation differs from the prior valuation
- Provide information for annual financial statements

# The Valuation Process

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## Input

Member Data  
Asset Information  
Benefit Provisions  
Actuarial Assumptions  
Funding Methodology



## Results

Actuarial Value of Assets  
Normal Cost and Actuarial Liability  
Unfunded Liability and Funded Ratio  
Funding Period  
Actuarially Determined Employer  
Contribution  
Accounting Results

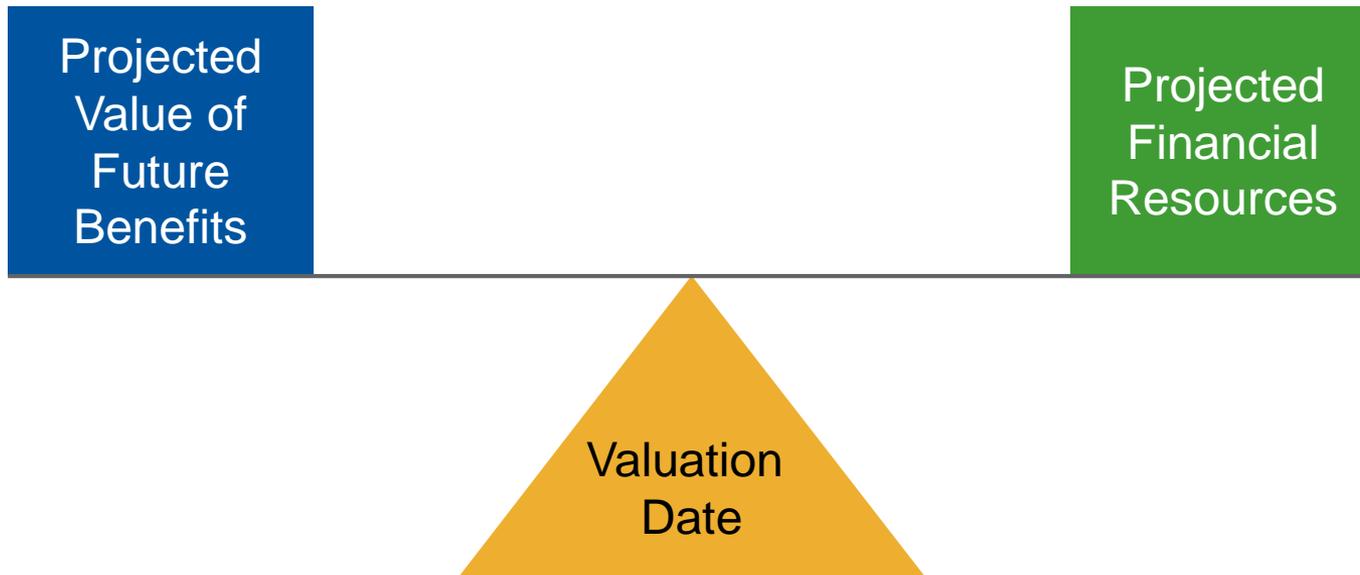
# How is an Actuarial Valuation Performed?

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- Gather data as of the valuation date
  - Participant data
  - Financial data
- Project a benefit for each member, for each possible benefit
- Utilize actuarial assumptions
  - Economic (investment return, inflation, salary raises)
  - Demographic (death, disability, retirement, turnover)
- Apply assumptions to benefits to determine a total liability and assign liabilities to service
- Apply the funding policy to determine the actuarially determined contribution (ADC)
  - Based on actuarial cost method and asset valuation method

# Actuarial Balance

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Over the life of a pension system,

$\text{Benefits} + \text{Expenses} = \text{Contributions} + \text{Investment Return}$

$\text{Contributions} = \text{Benefits} + \text{Expenses} - \text{Investment Return}$

# Actuarially Determined Contribution vs. Funding Period

## Actuarially Determined Contribution (ADC)

- Equal to the normal cost plus amortization of the unfunded actuarial accrued liability (UAAL)
- The funding policy components:
  - Entry age cost method
  - Asset valuation method – five-year smoothing period with a 20% corridor
  - Amortization period – closed 30 year period beginning July 1, 2013, as a level percentage of payroll (27 years as of July 1, 2016)

## Funding Period

- Number of years that the UAAL is expected to be amortized based upon the fixed member and employer contribution rates
- Funding period is compared to the ADC's amortization period to assess the progress toward amortizing the unfunded accrued liability

The employer contribution rate is compared to the ADC as a measure of the adequacy of the employer (and member) contribution rates.

# Actuarial Assumptions

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Two types:

## Demographic

- Retirement
- Disability
- Death in active service
- Withdrawal
- Death after retirement

## Economic

- Inflation – 2.75%
- Investment return – 7.75%
- Salary increases – 14.50% for new members to 4.25% for members with 25+ years
- Payroll growth – 3.25%

Actuaries make assumptions as to when and why a member will leave active service, and estimate the amount and duration of the pension benefits paid.

# Actuarial Methods

## Asset Valuation Method (Actuarial Assets)

- Investment gains and losses recognized over a number of years
- TFFR uses a five-year smoothing method
- A 20% market value corridor is applied – actuarial value of assets must fall within 80% to 120% of market value)

## Cost Method

- Allocation of liability to past and future service
- TFFR uses the entry age normal cost method
  - Allocates cost of member's retirement benefit over expected career as a level % of salary
  - Most common cost method among public sector retirement systems
  - Required by GASB

## Amortization Method

- Relies on two inputs:
  - Number of years to amortize the UAL
  - Level dollar or level percentage of payroll approach
- TFFR's amortization method:
  - 30-year closed period that began July 1, 2013
  - 27 years remaining
  - Level percentage of payroll

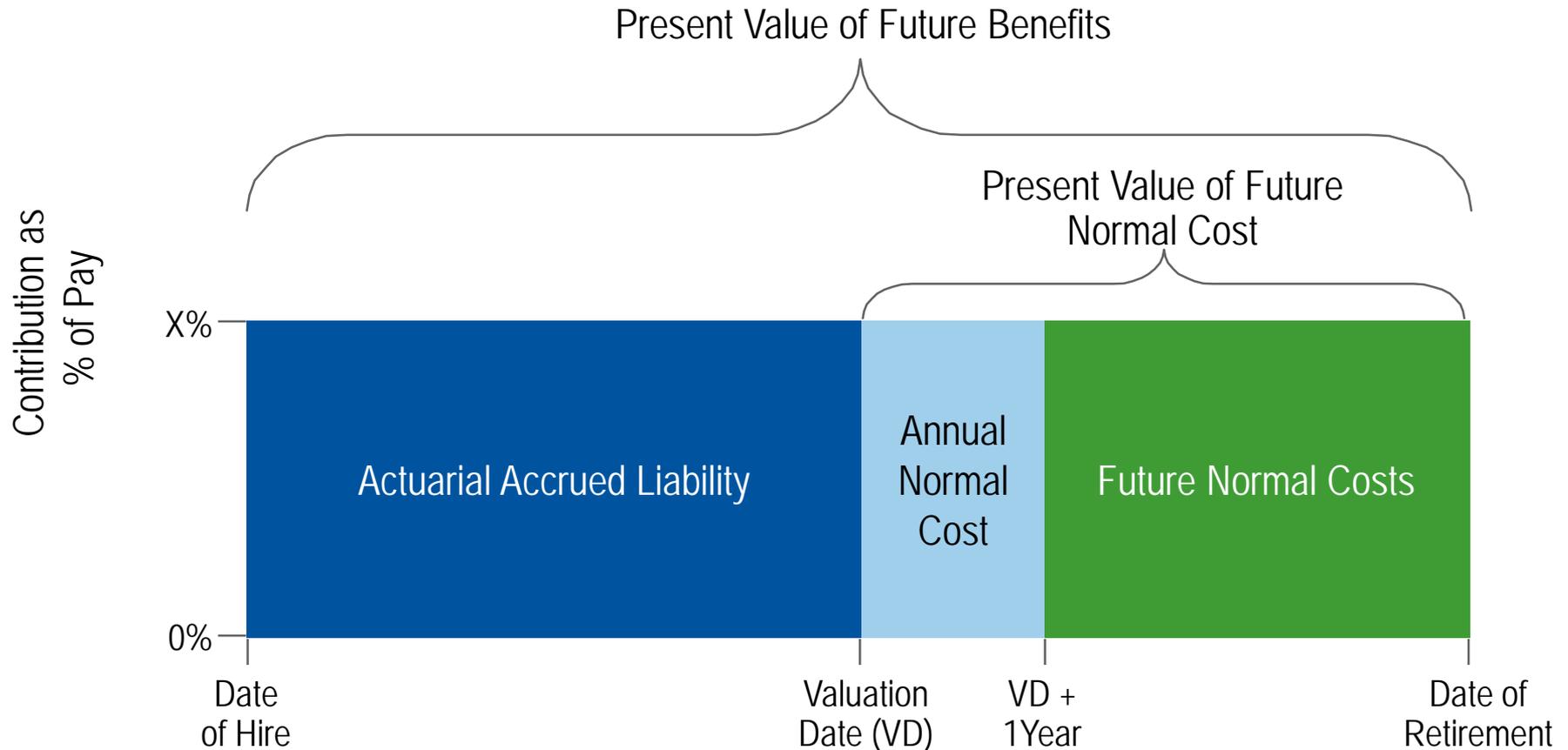
# Entry Age Normal Cost Method

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## Allocates Cost Between Past and Future service

- **Normal Cost:** Cost of annual benefit accrual as a level percent of salary
- **Actuarial Accrued Liability:** Represents accumulated value of past normal costs (or difference between total cost and future normal costs)
- **Unfunded Actuarial Accrued Liability:** Actuarial accrued liability minus actuarial value of assets
- **Actuarially Determined Employer Contribution:**
  - Normal cost (net of member contributions) plus
  - Amortization payment of unfunded accrued liability over a 27-year closed period as a percent of payroll
    - 30-year closed period began July 1, 2013

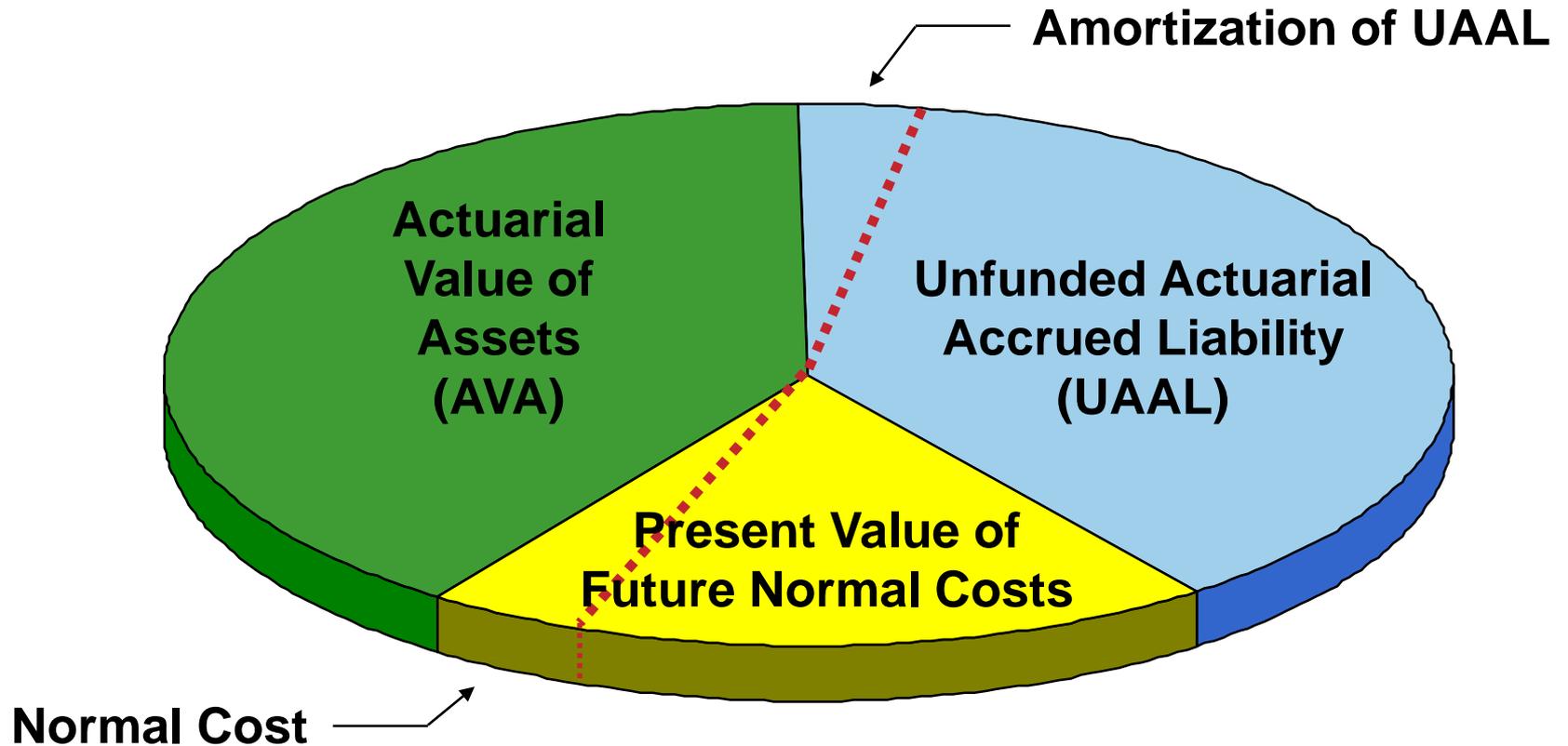
# Funding Process



$$\text{Actuarial Accrued Liability} - \text{Assets} = \text{Unfunded Actuarial Accrued Liability}$$

# Actuarially Determined Contribution

## Present Value of Future Benefits



# Summary of Valuation Highlights

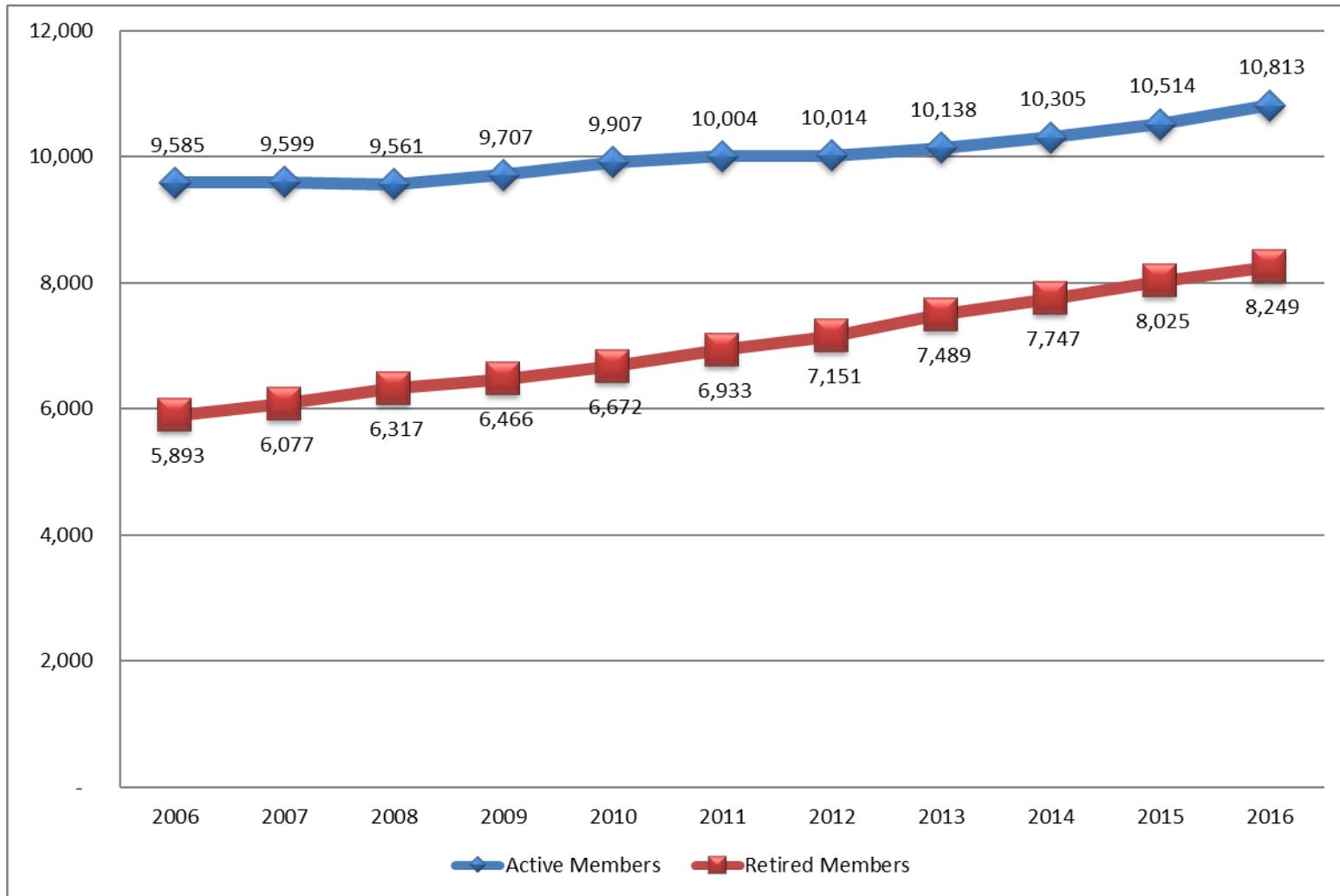
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- Market value of assets returned 0.39% for year ending 6/30/16 (Segal calculation)
  - Gradual recognition of deferred gains resulted in 6.16% return on actuarial value of assets
- Net impact on funded ratio was an increase from 61.6% (as of 7/1/15) to 62.1% (as of 7/1/16)
- Effective amortization period remained unchanged at 29 years
- Net impact on actuarially determined contribution (ADC) was an increase from 13.04 % of payroll (FY15) to 13.22% of payroll (FY16)
  - Based on the employer contribution rate of 12.75% for FY15, the contribution deficiency has increased from 0.29% of payroll to 0.47% of payroll
- GASB Net Pension Liability increased from \$1.31 billion as of 6/30/15, to \$1.47 billion as of 6/30/16

# Membership

	2016	2015	Change
<b>Active</b>			
• Number	10,813	10,514	+2.8%
• Payroll (annualized)	\$627.0 mil	\$589.8 mil	+6.3%
• Average Age	42.3 years	42.5 years	- 0.2 years
• Average Service	12.1 years	12.4 years	- 0.3 years
<b>Retirees and Beneficiaries</b>			
• Number	8,249	8,025	+2.8%
• Total Annual Benefits	\$187.2 mil	\$177.4 mil	+5.5%
• Average Monthly Benefit	\$1,891	\$1,842	+2.7%

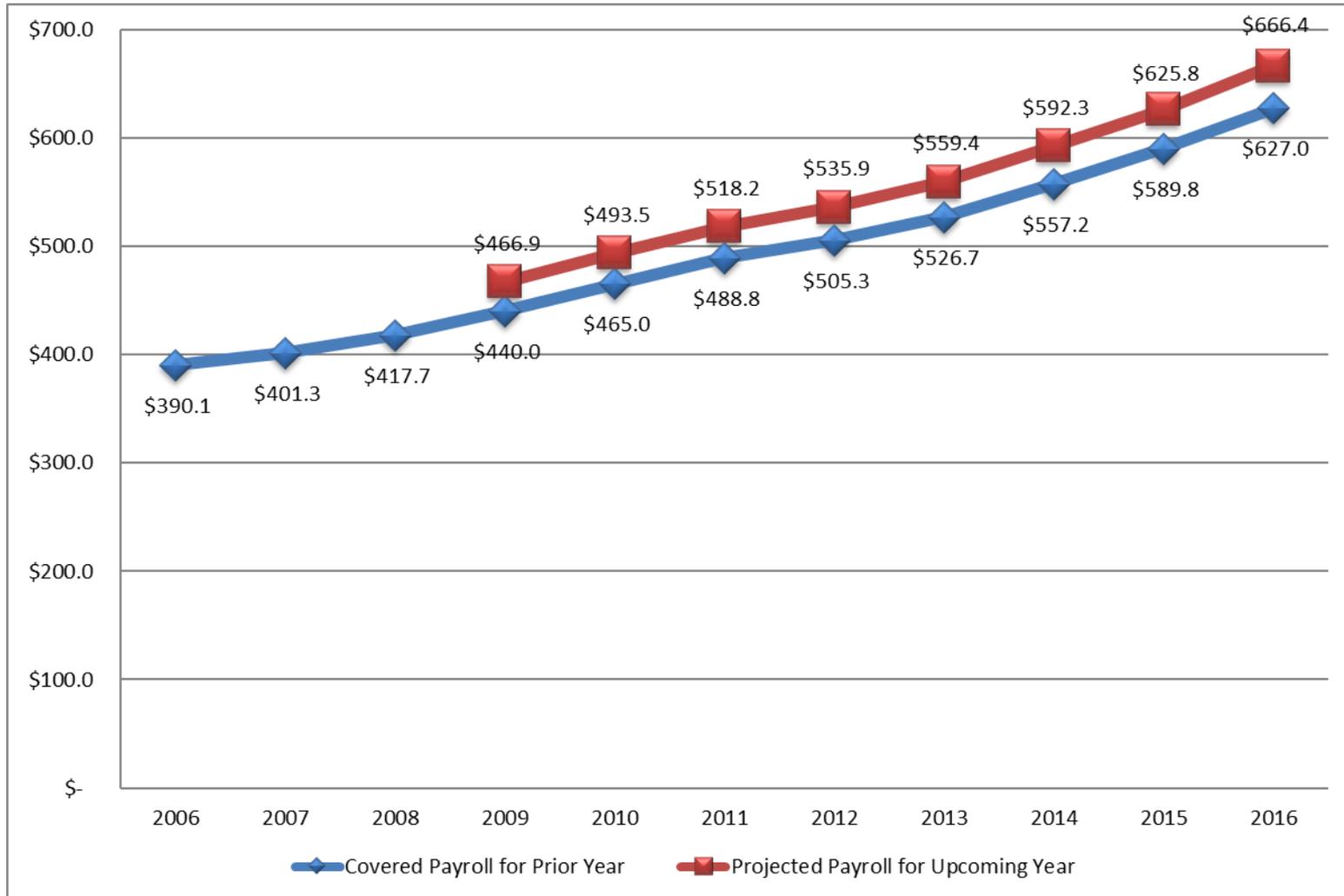
# Active and Retired Membership



Since 2006, number of retirees and beneficiaries has increased 3.4% per year on average.

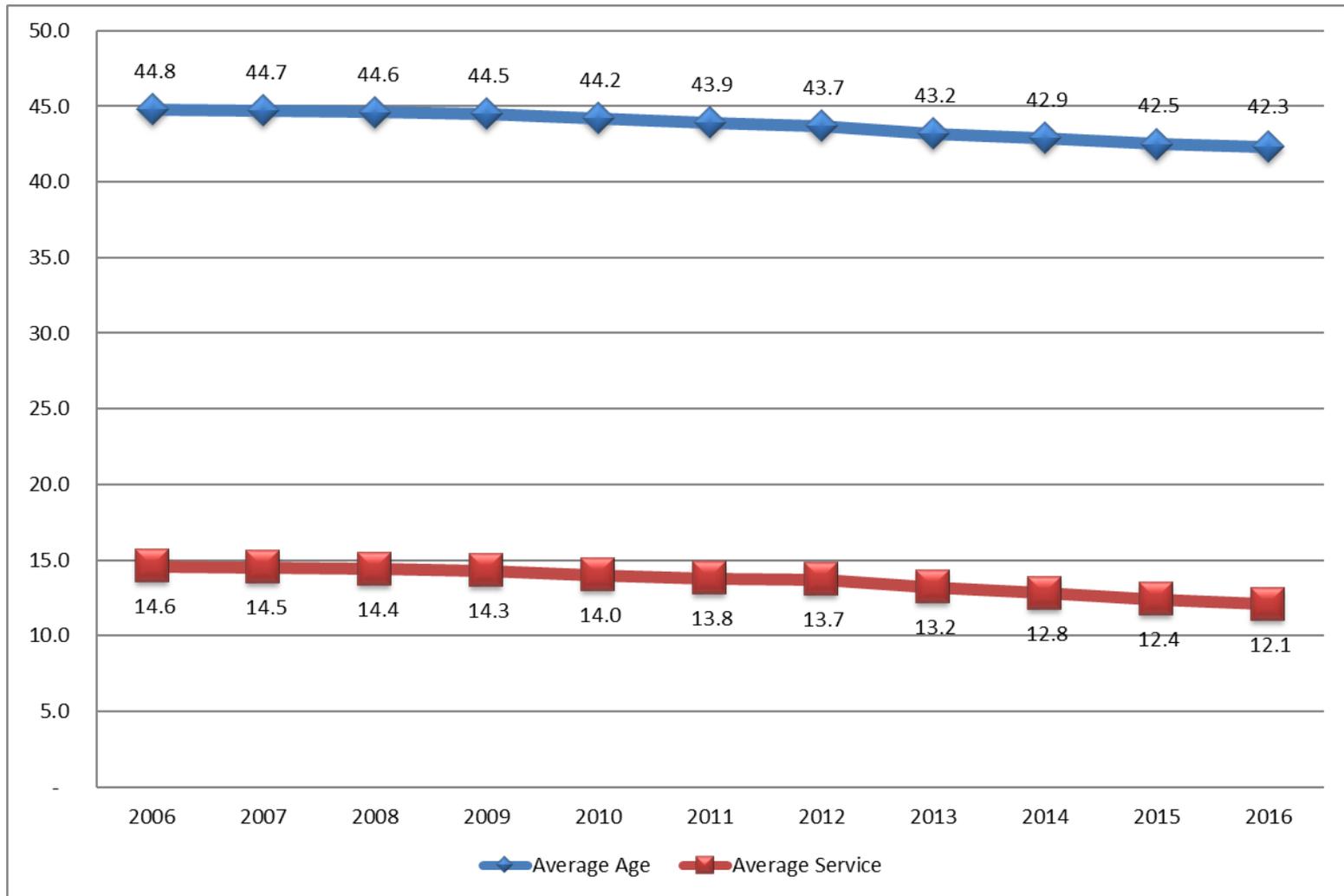
# Active Payroll

\$ Millions

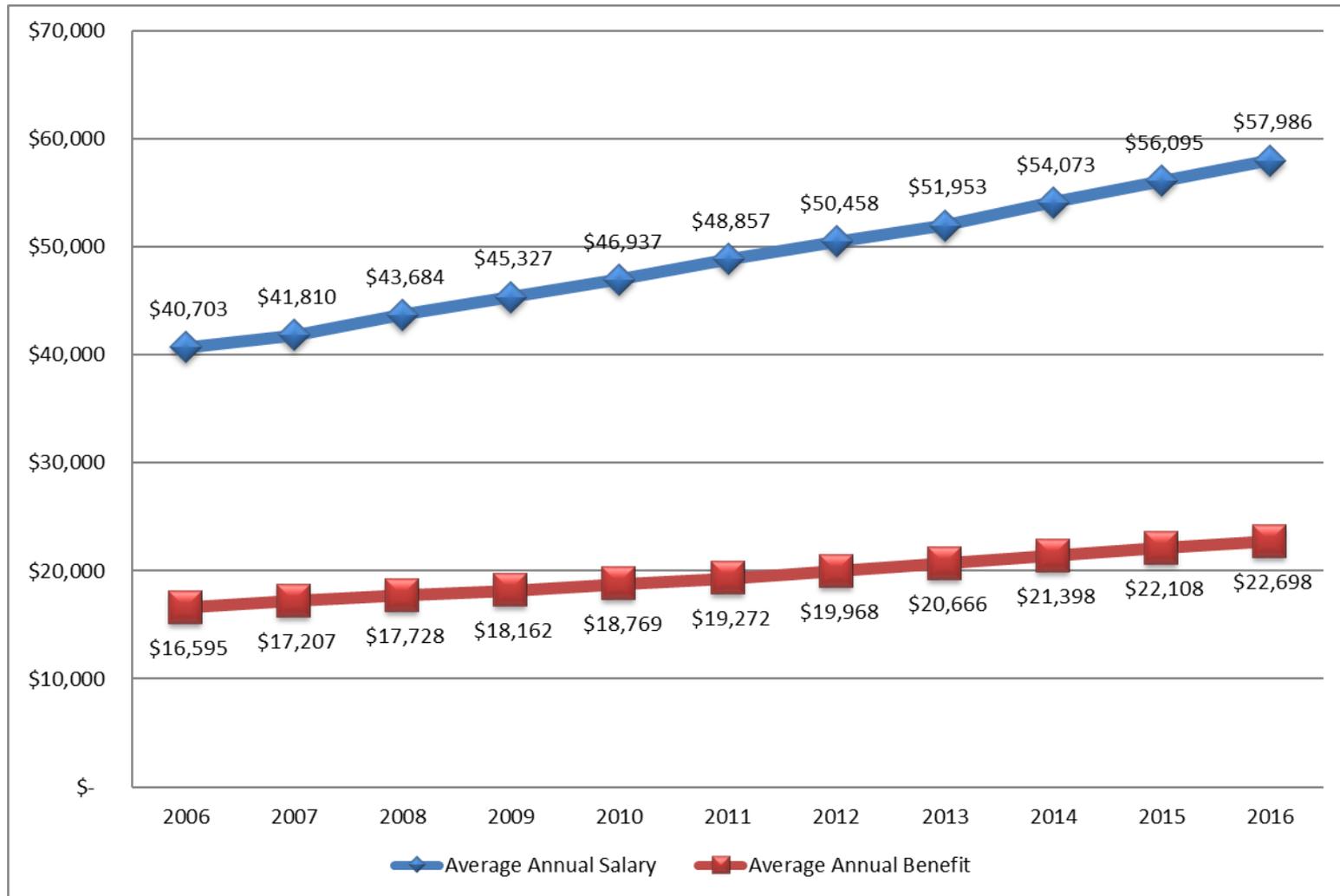


Since 2006, active payroll has increased, on average, 4.9% per year.

# Average Age and Service of Active Members



# Average Salary and Average Benefit



Since 2006, average salary has increased, on average, 3.6% per year. Average annual benefit has increased by 3.2% per year.