



# Michigan Public School Employees Retirement System

## Pension Actuarial Valuation Results as of September 30, 2015

**GRS**

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Consultants & Actuaries  
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# Actuarial Valuation Process

*Member Data*

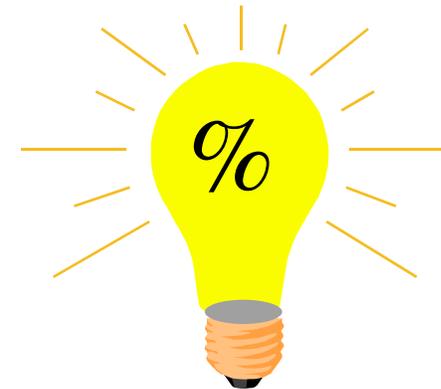


*Financial Data*



**Actuarial  
Valuation**

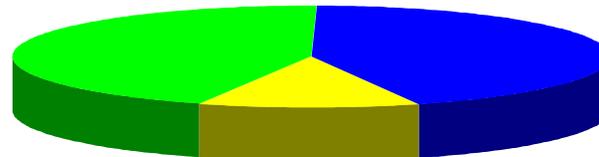
*Actuarial Assumptions*

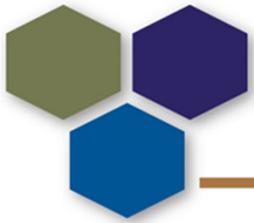


*Plan Provisions*



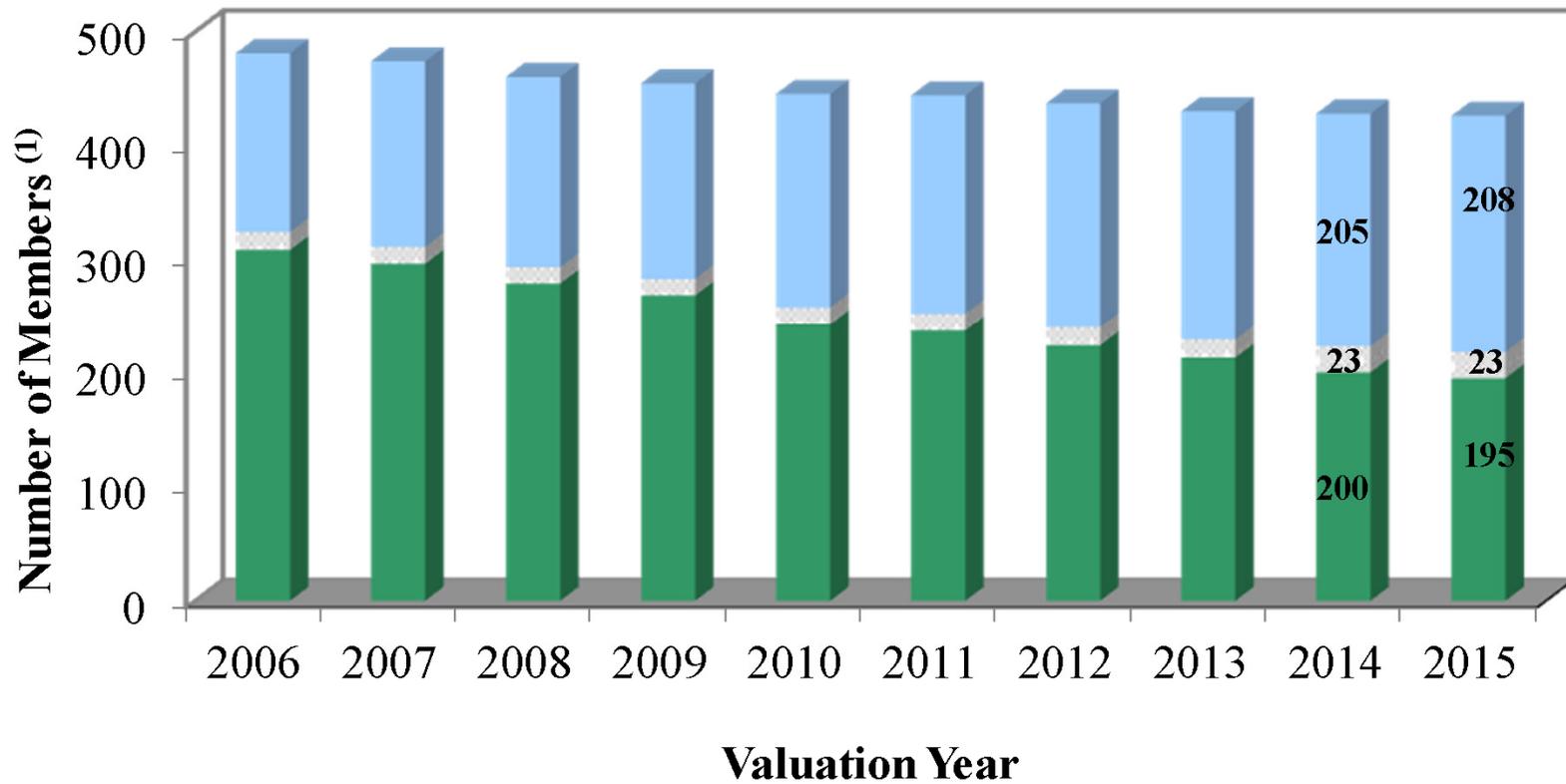
*Actuarial Cost Method*





# Defined Benefit Plan Membership Data

(Counts in Thousands)

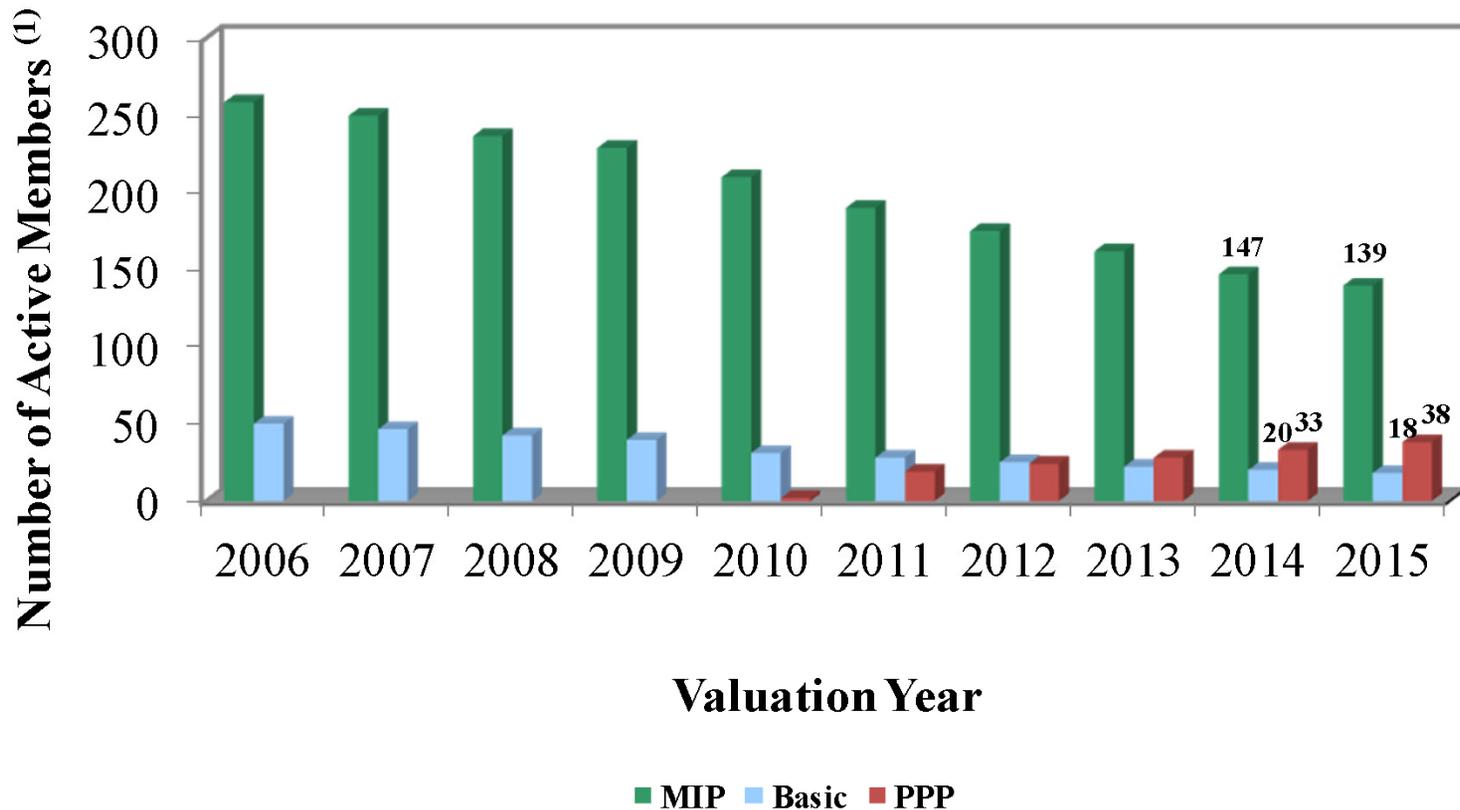


■ Actives   ■ Inactives   ■ Retirees & Beneficiaries

(1) Excludes active members covered exclusively by the pure defined contribution plan. Starting in 2014, active members who elected not to continue in the defined benefit plan as a result of PA 300 are classified as inactive members.



## Defined Benefit Plan Active Members by Group (Counts in Thousands)

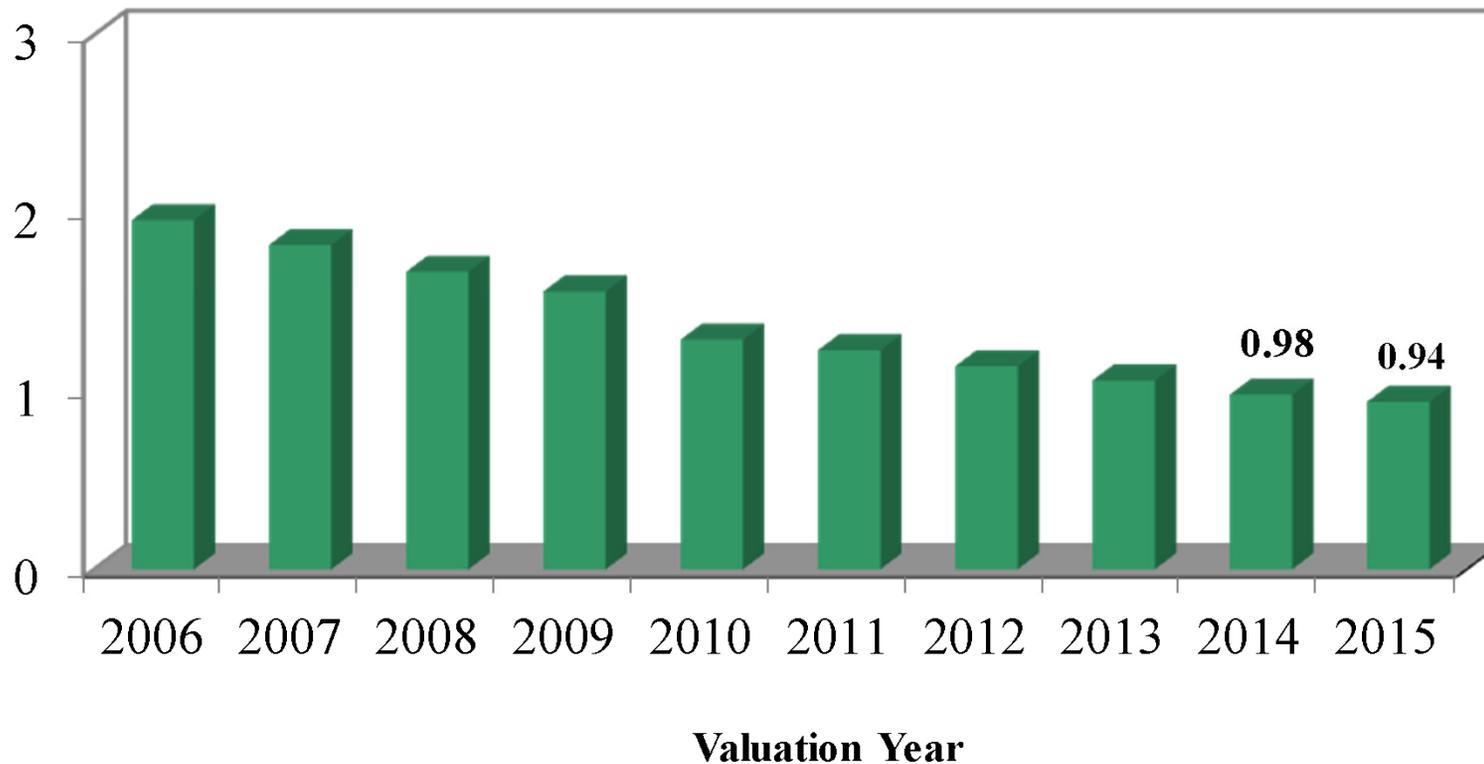


(1) Excludes active members covered exclusively by the pure defined contribution plan. Starting in 2014, active members who elected not to continue in the defined benefit plan as a result of PA 300 are classified as inactive members.

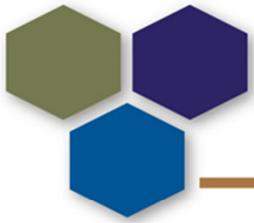


# Ratio of Active Members<sup>(1)</sup> to Pension Benefit Recipients

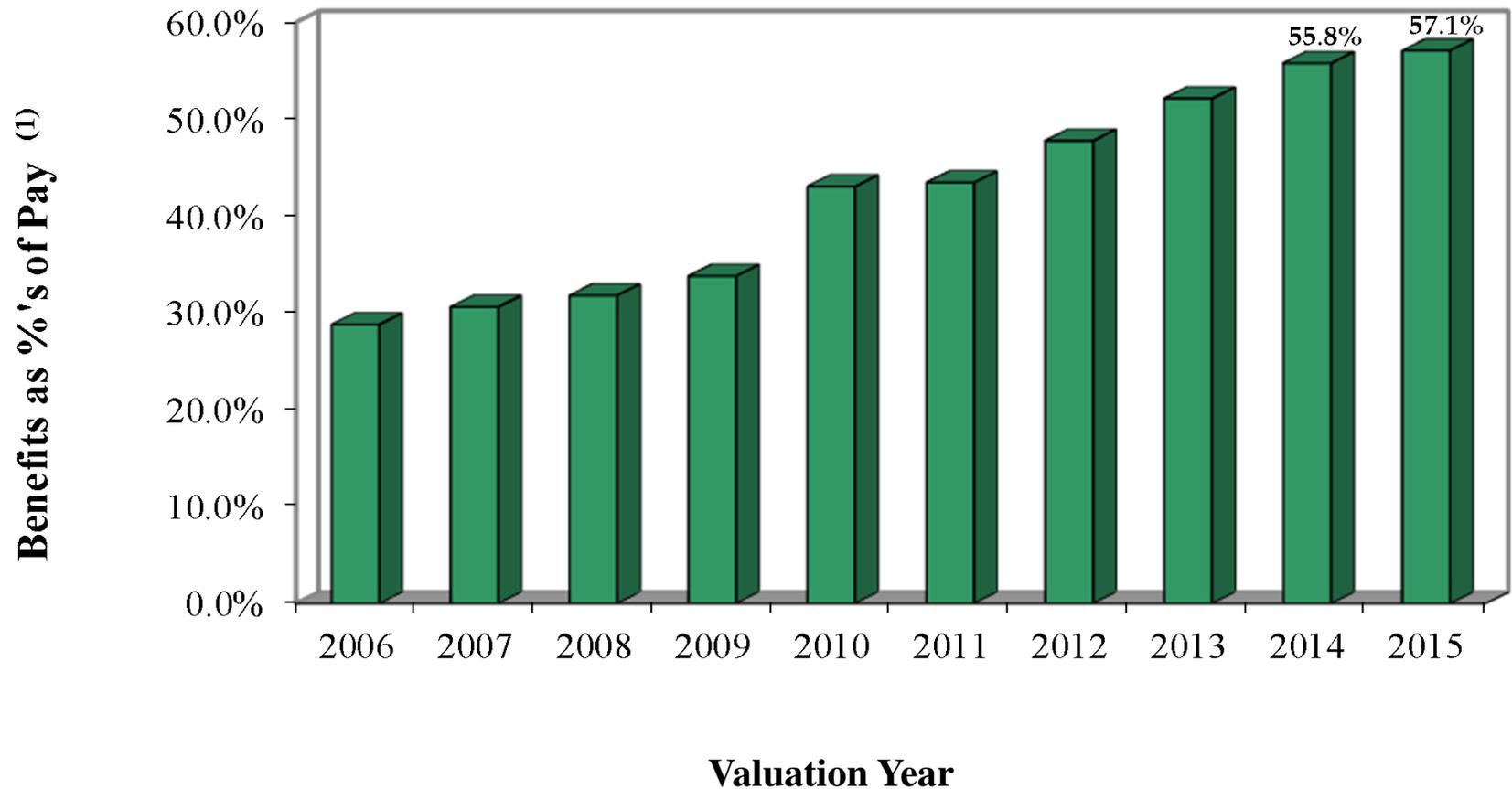
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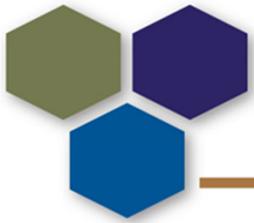
(1) Excludes active members covered exclusively by the pure defined contribution plan. Starting in 2014, active members who elected not to continue in the defined benefit plan as a result of PA 300 are classified as inactive members.



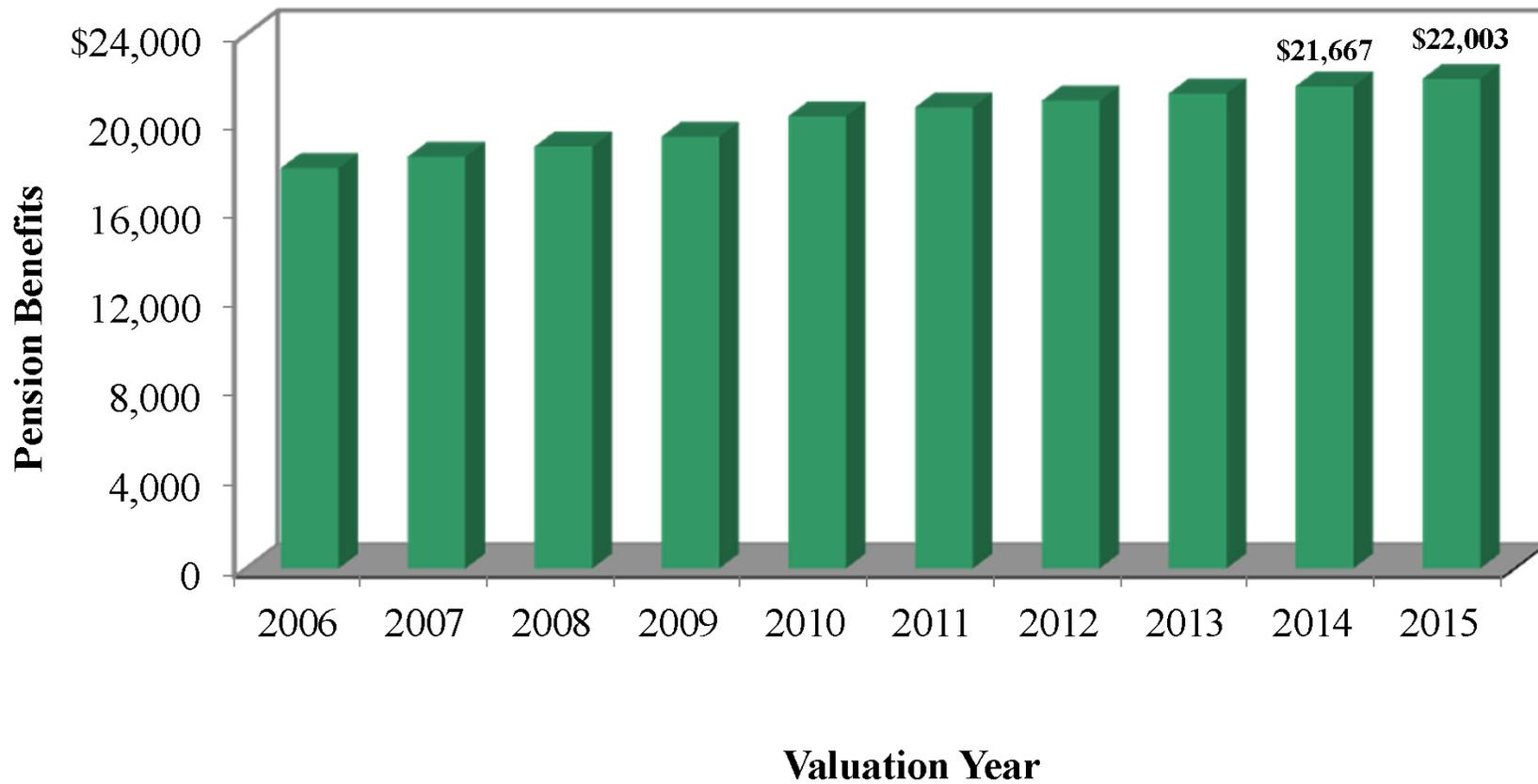
# Pension Benefits Expressed as %'s of Active Member Pay



(1) Percentage of defined benefit MPSERS payroll (excludes payroll of those covered exclusively by the pure defined contribution plan and of those who elected not to continue in the defined benefit plan as a result of PA 300).



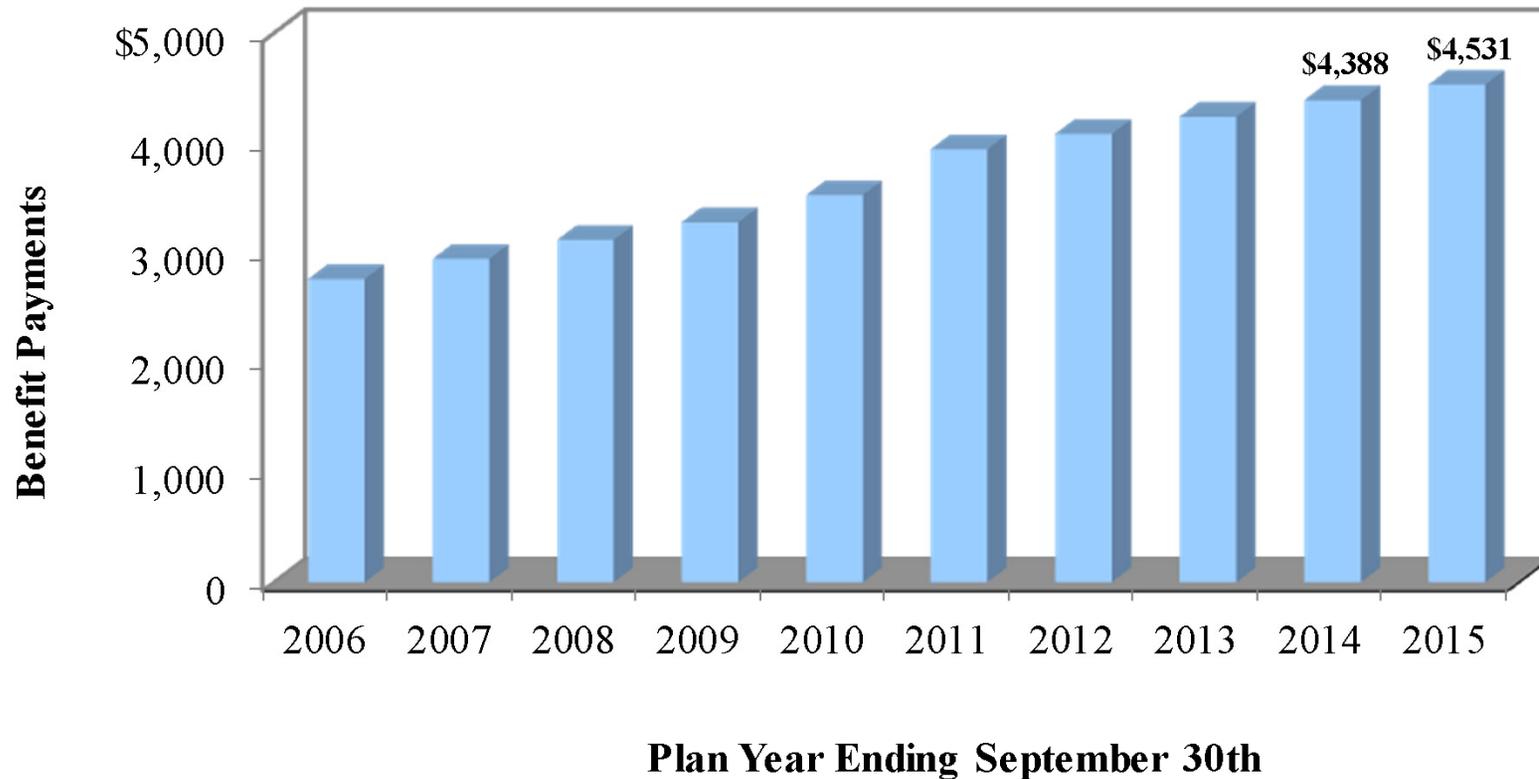
# Average Annual Pensions

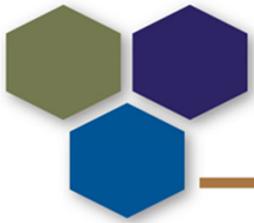




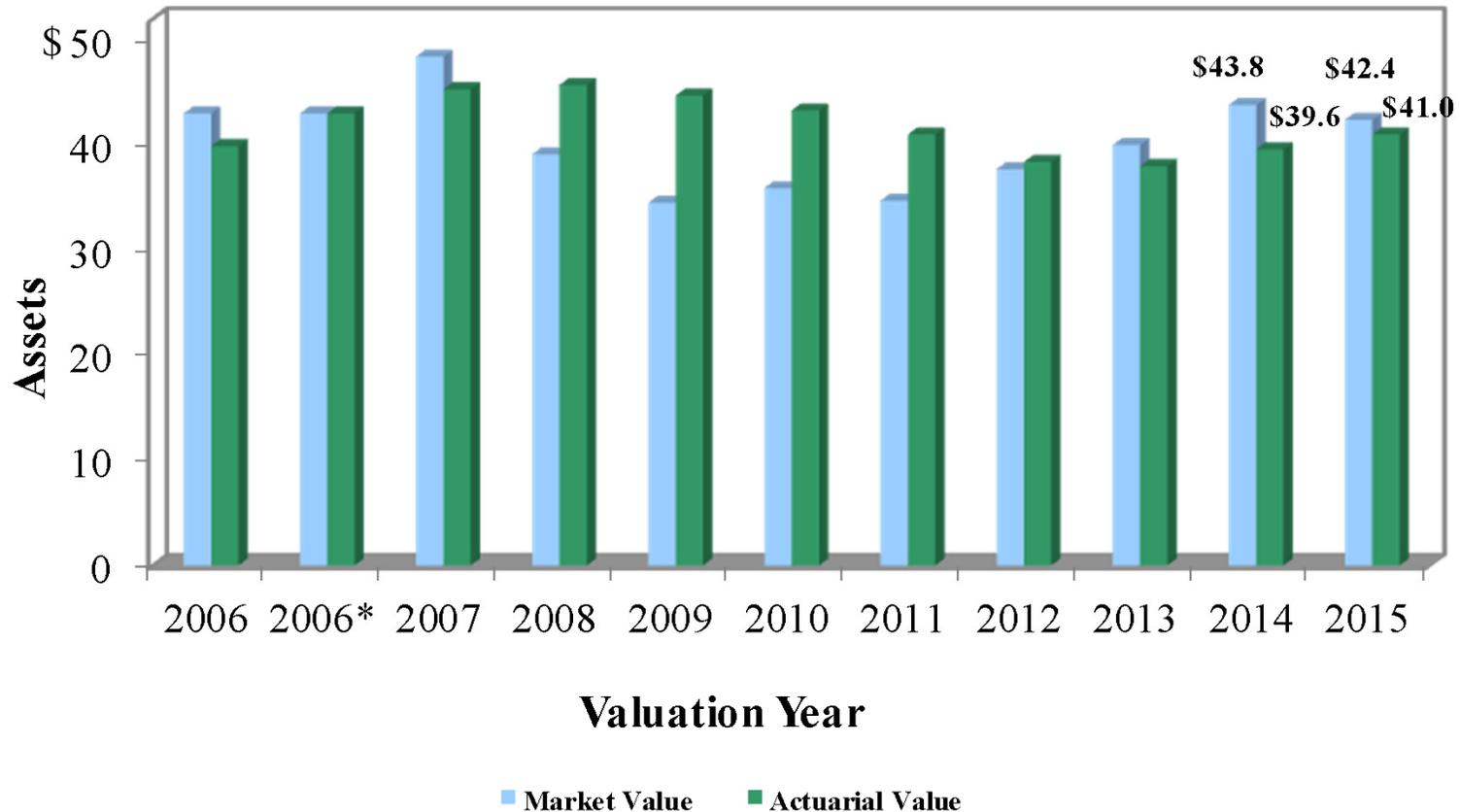
## Total Benefit Payments by Fiscal Year (Amounts in Millions)

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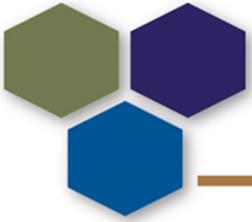




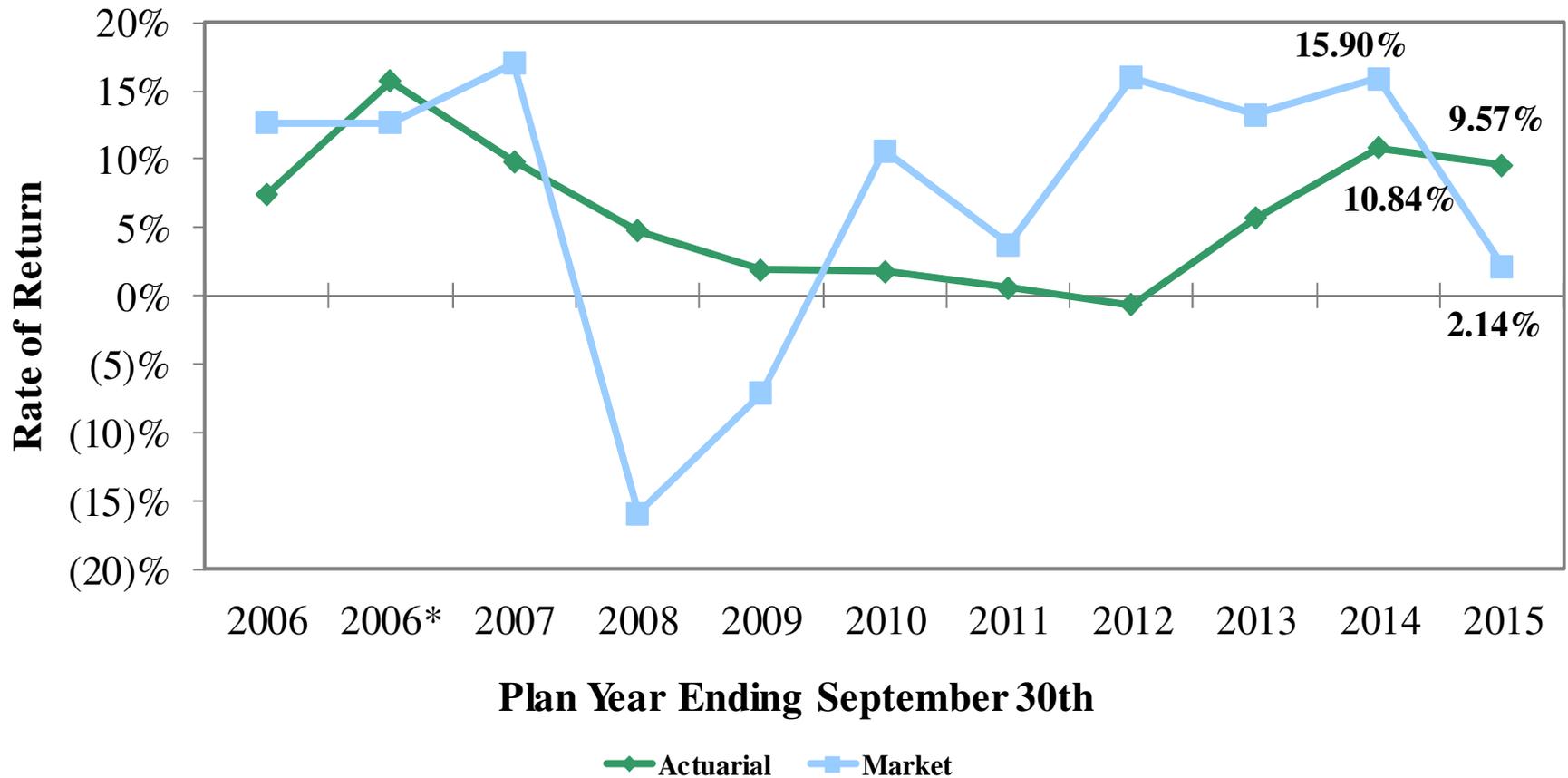
# Growth of Pension Assets (Amounts in Billions)



\* After adjusting to market value.



# Actuarial & Market Net Rates of Return

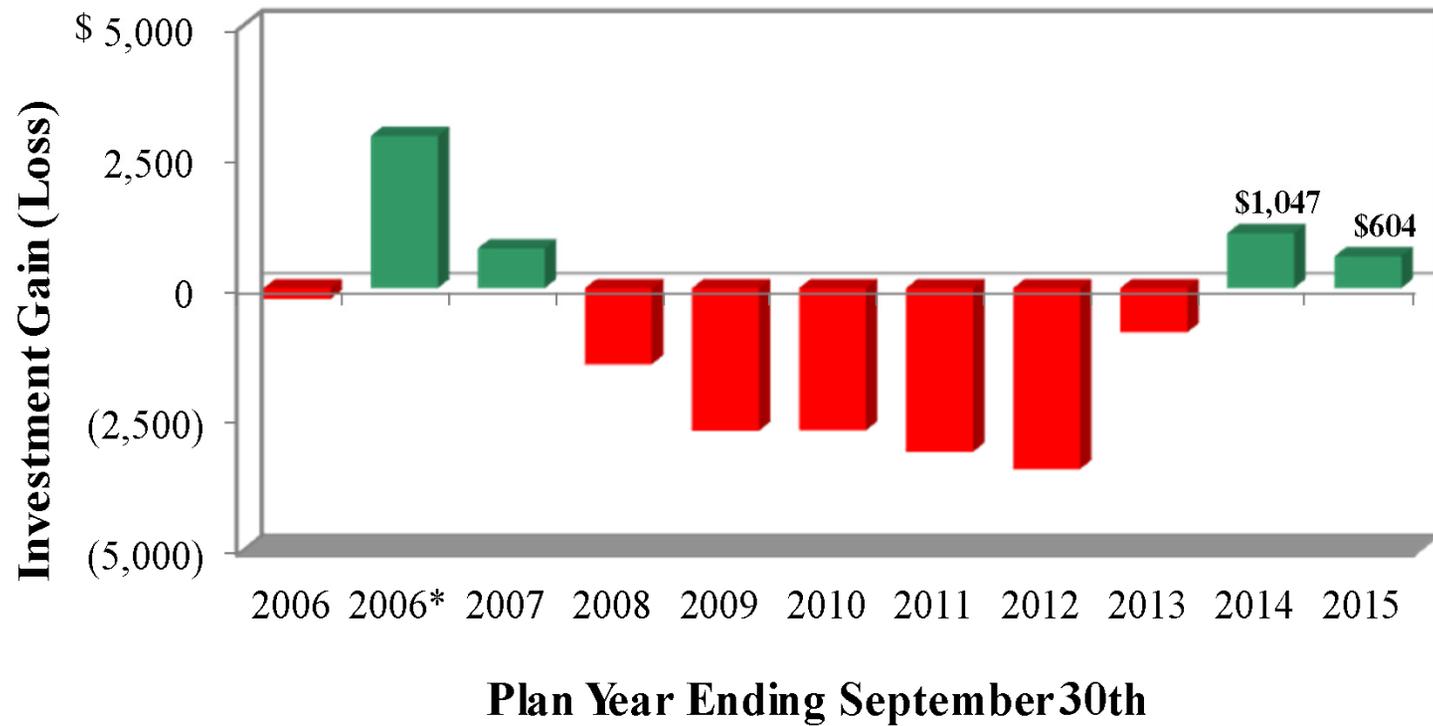


\* After adjusting to market value.  
Rates of return shown above are for non-hybrid assets.



# Investment Gain/(Loss)

(Amounts in Millions)

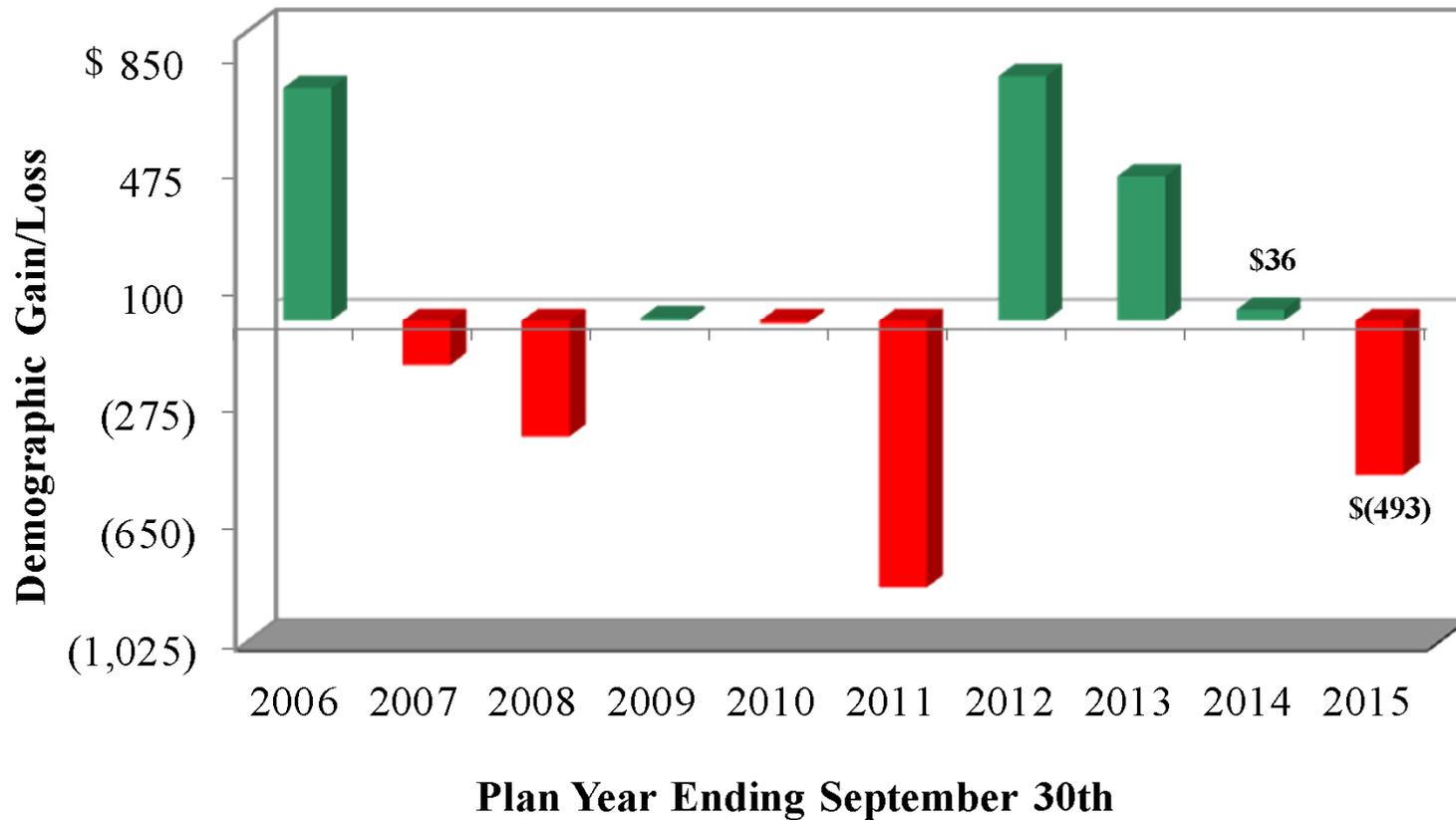


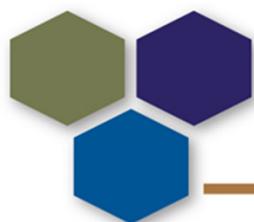
\* After adjusting to market value.



# Demographic Gain/(Loss)

(Amounts in Millions)





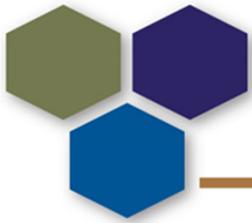
# Gain/(Loss) by Type of Activity

(Amounts in Millions)

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Plan Year Ending 9/30	2011	2012	2013	2014	2015
Rehires	\$ (11.1)	\$ (1.1)	\$ (1.8)	\$ (12.9)	\$ 8.0
Retiree Deaths	(316.4)	(184.1)	(228.3)	(183.8)	(66.5)
Investments	(3,129.1)	(3,453.9)	(861.4)	1,047.4	604.3
Pay Increases	(255.4)	1,170.8	819.2	333.0	(132.1)
Withdrawal	(29.4)	(41.1)	(14.3)	(53.6)	(53.0)
Retirements	17.6	31.4	33.1	40.6	12.4
University Refund*	0.0	0.0	0.0	0.0	(112.5)
Other	(256.7)	(194.9)	(145.6)	(87.1)	(149.4)
<b>Total</b>	<b>(3,980.5)</b>	<b>(2,672.9)</b>	<b>(399.1)</b>	<b>1,083.6</b>	<b>111.2</b>

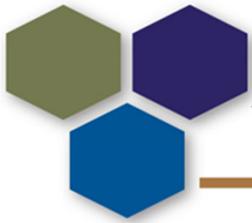
\* Refund of University employer contributions.



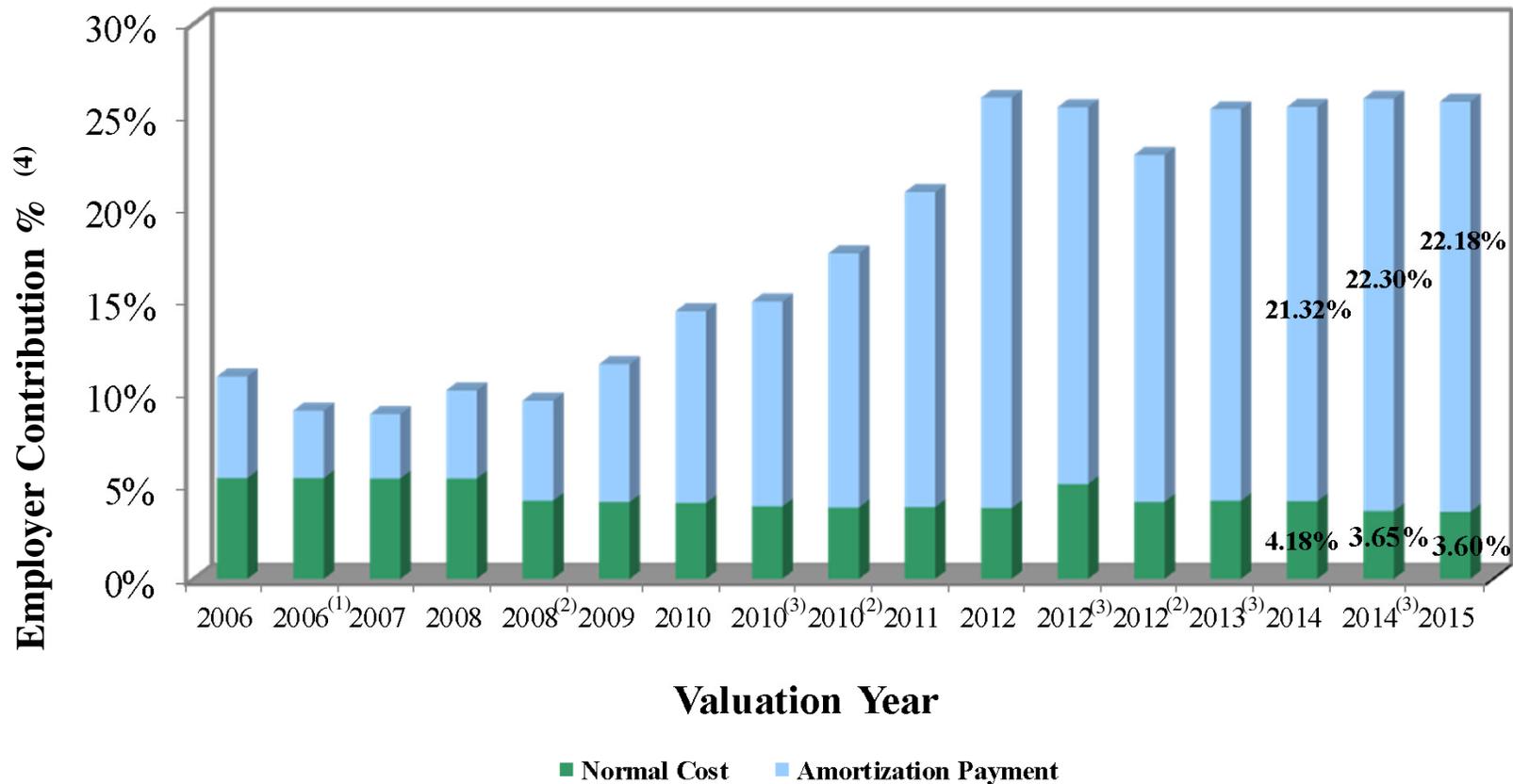
# Required Employer Contribution

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- ◆ September 30, 2015 valuation establishes the employer contribution for fiscal year 2018
- ◆ Plan changes resulting from Public Act 300 of 2012 are reflected in the valuation (first reflected in the September 30, 2012 valuation)
- ◆ Prior to the September 30, 2012 valuation, valuations would establish the Annual Required Contribution (ARC) for the year following the valuation date
  - ▶ However, for budgeting purposes, the contribution rate would be budgeted for a later fiscal year
  - ▶ A reconciliation process would be used to make up any differences occurring because of the timing difference
- ◆ The valuation determines the contribution for the year it is budgeted
- ◆ For the September 30, 2015 valuation, it has been reported to the actuary that the reconciliation process has been reinstated
  - ▶ The employer contribution requirements shown on slide 15 for fiscal year 2018 are needed in addition to the reconciliation payments required by subsection 41(9) of the MPSEERS statute
  - ▶ The scheduled reconciliation payments were prepared and reported by ORS



# Historical Employer Contribution %'s Valuation as of September 30



(1) After adjusting to market value.

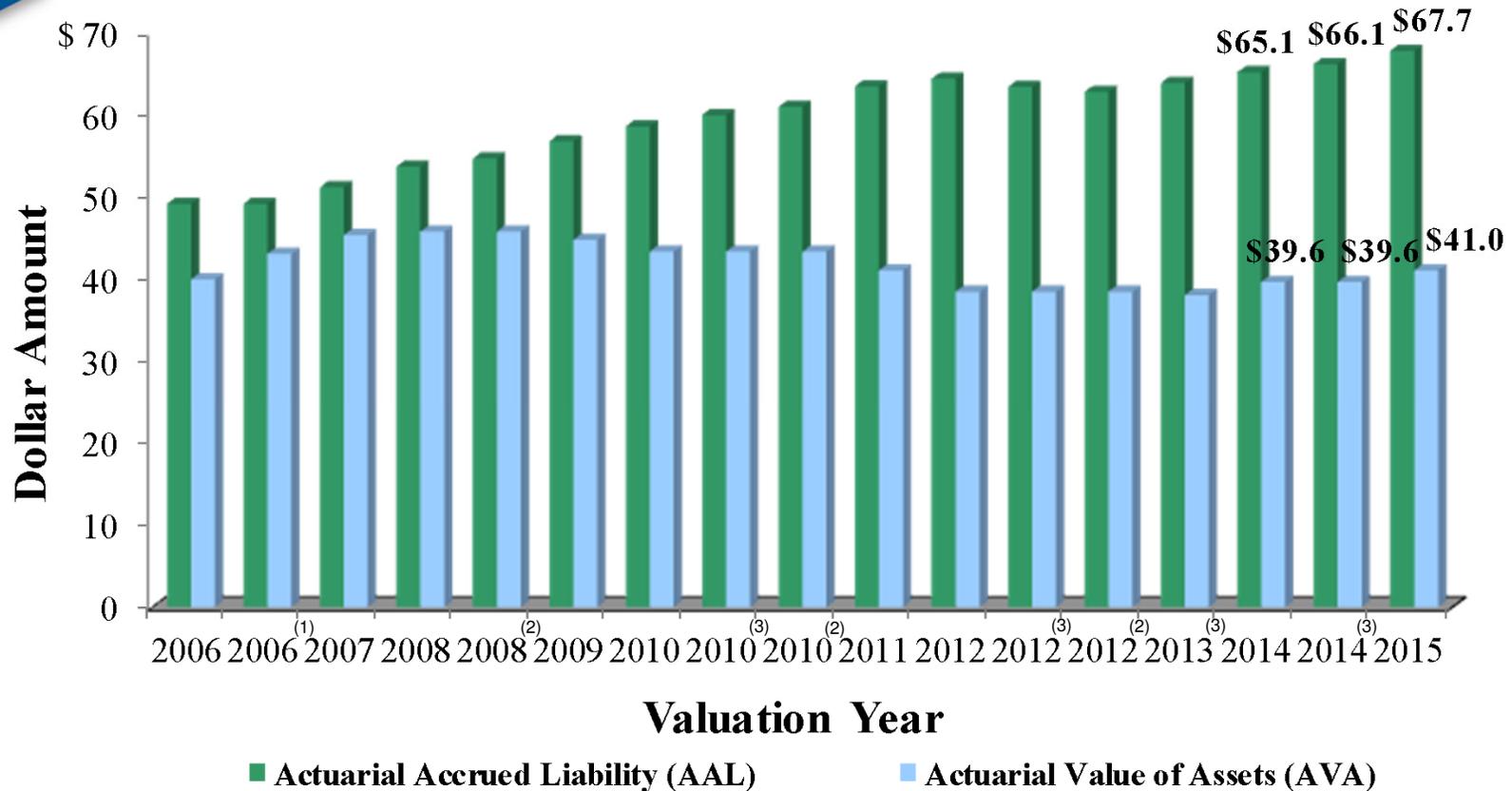
(2) Revised benefit provisions.

(3) Reflects actuarial assumptions and/or methods change.

(4) Starting with the 2012 employer calculated contribution, the normal cost is expressed as a percentage of defined benefit participating active member payroll, while the Amortization Payment is expressed as a percentage of total MPSERS active member payroll (including that of defined benefit and defined contribution active members).



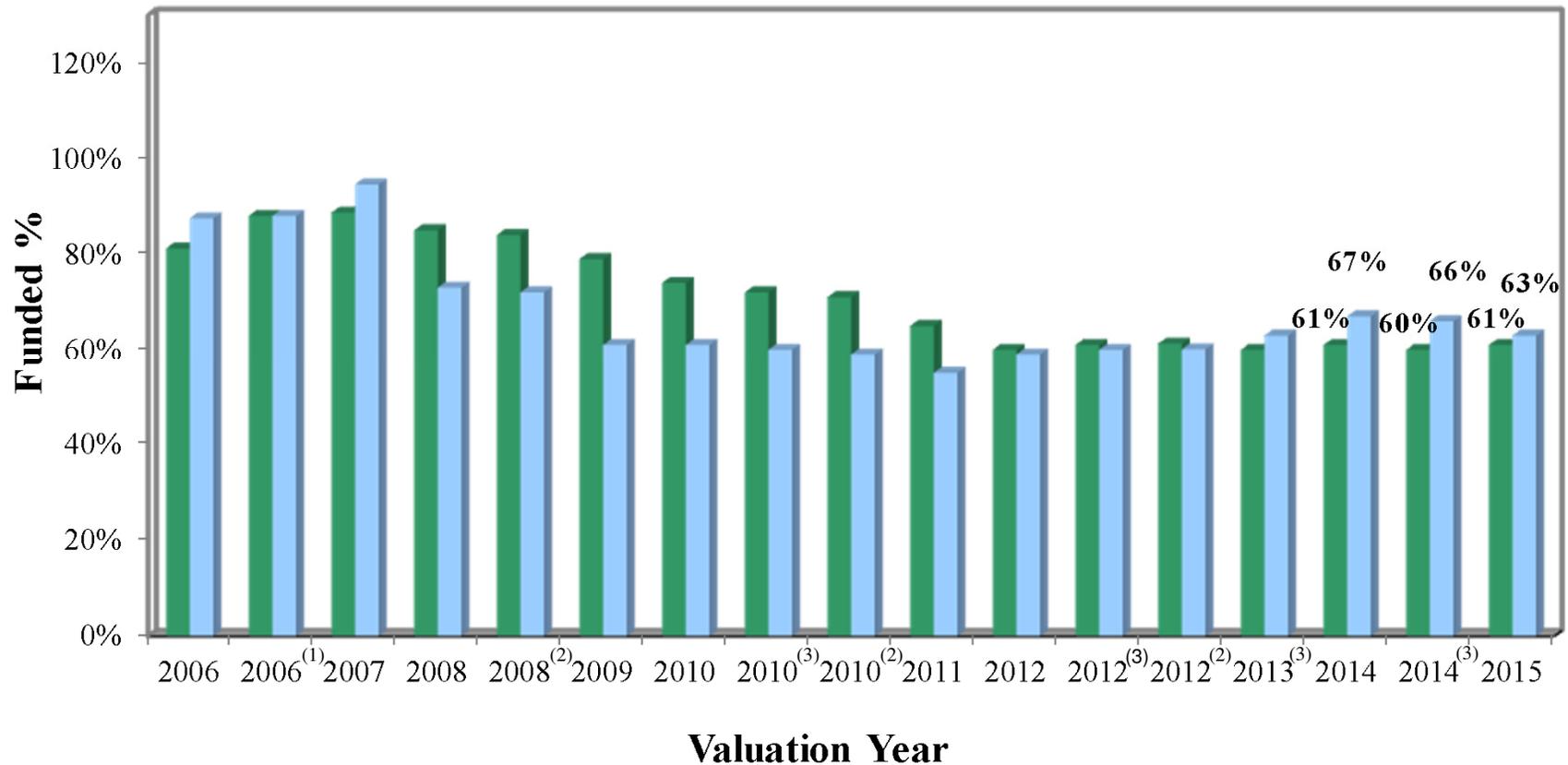
# Actuarial Accrued Liability Compared to Actuarial Value of Assets (in Billions)



(1) After adjusting to market value.  
 (2) Revised benefit provisions.  
 (3) Reflects actuarial assumptions and/or methods changes.



# Retirement System Funded % Based on Actuarial Value and Market Value of Assets

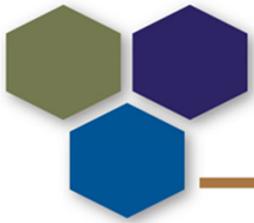


■ Funded % based on AVA    ■ Funded % based on MVA

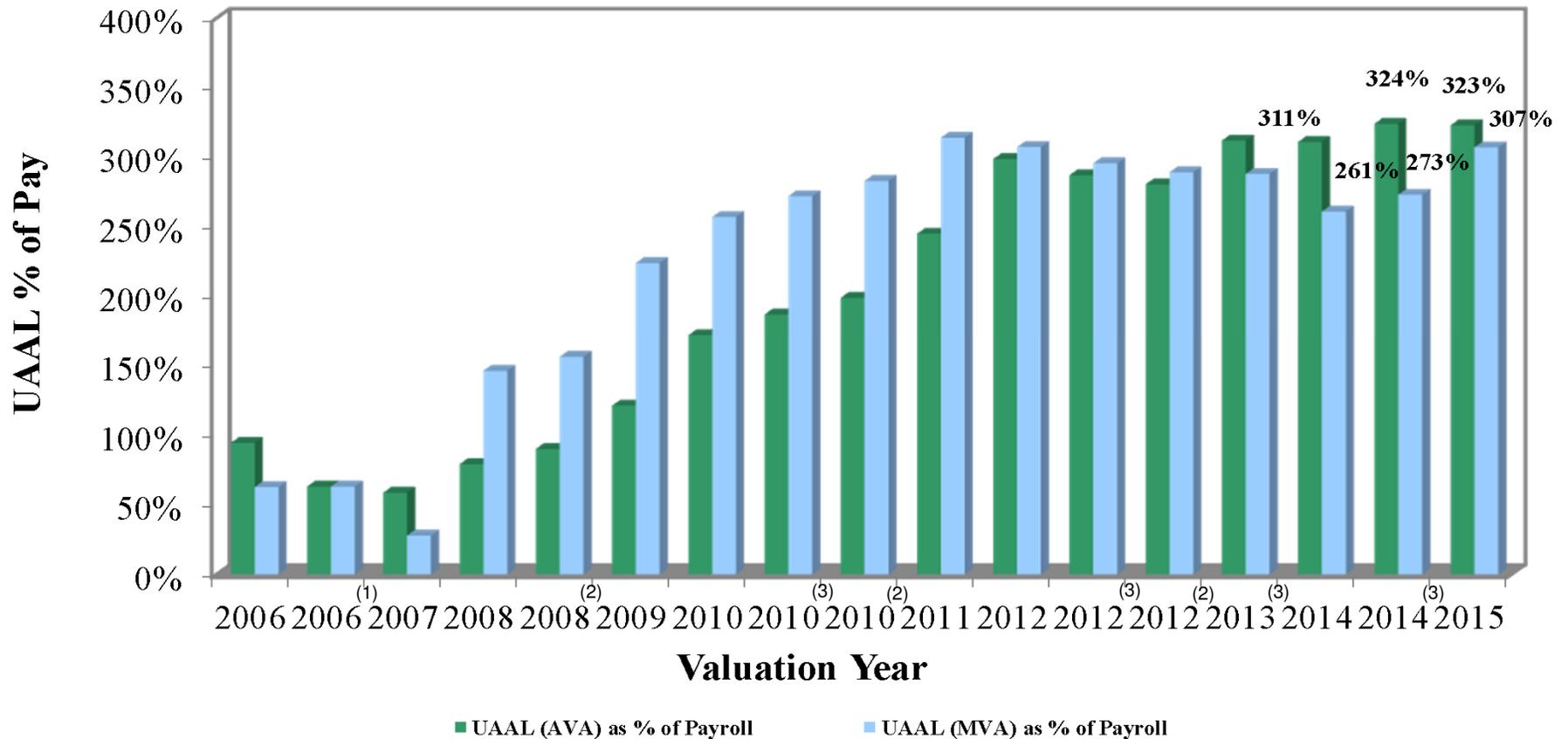
(1) After adjusting to market value.

(2) Revised benefit provisions.

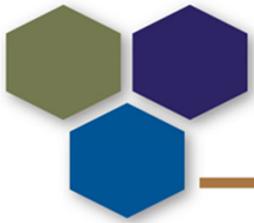
(3) Reflects actuarial assumptions and/or methods changes.



# Unfunded Actuarial Accrued Liability as Percentage of Payroll <sup>(4)</sup>



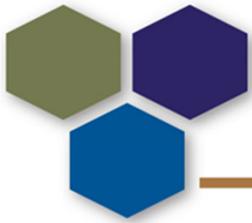
(1) After adjusting to market value.  
 (2) Revised benefit provisions.  
 (3) Reflects actuarial assumptions and methods change.  
 (4) Percentage of total MPSERS payroll (including both DB and DC active member payroll).



# Comments on the Investment Markets

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- ◆ Investment markets have been very volatile
- ◆ Valuation is based on a 5-year smoothed value of assets
  - ▶ Reduces the volatility of the valuation results
- ◆ 9/30/2015 smoothed value of assets was lower than market value
  - ▶ Provides some margin for possible adverse investment experience over the next few years
- ◆ Optional forms of payment
  - ▶ May wish to review factors after completion of the 2012-2017 Experience Study



# Disclaimers

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- ◆ This presentation is intended to be used in conjunction with the September 30, 2015 pension annual actuarial valuation report issued on May 2, 2016. This presentation should not be relied upon for any purpose other than the purpose described in the valuation report.
- ◆ This presentation shall not be construed to provide tax advice, legal advice or investment advice.
- ◆ The actuaries submitting this presentation (Mita Drazilov and Louise Gates) are Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.