

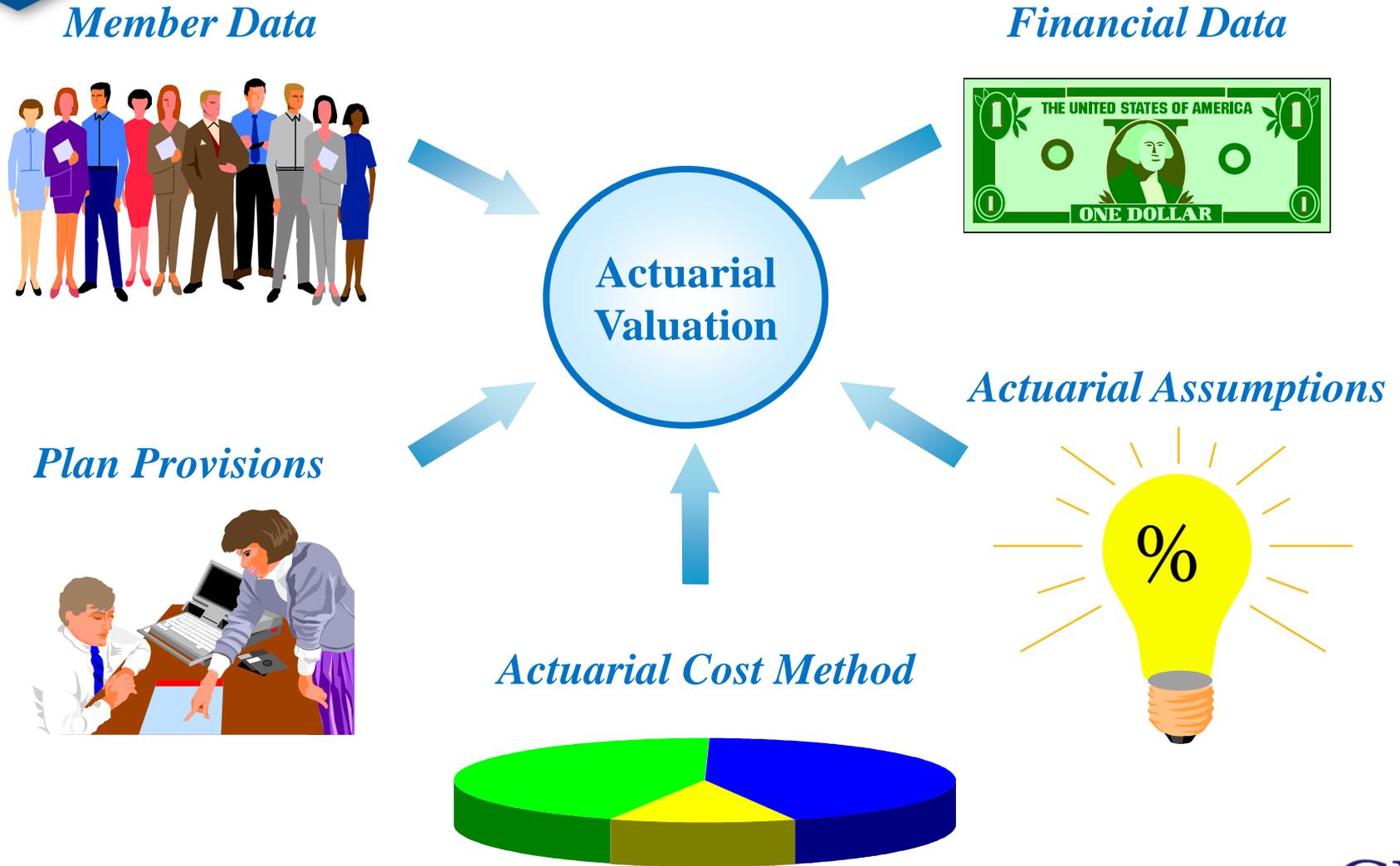
Michigan State Police Retirement System

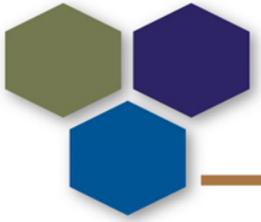
Pension Actuarial Valuation Results as of September 30, 2015



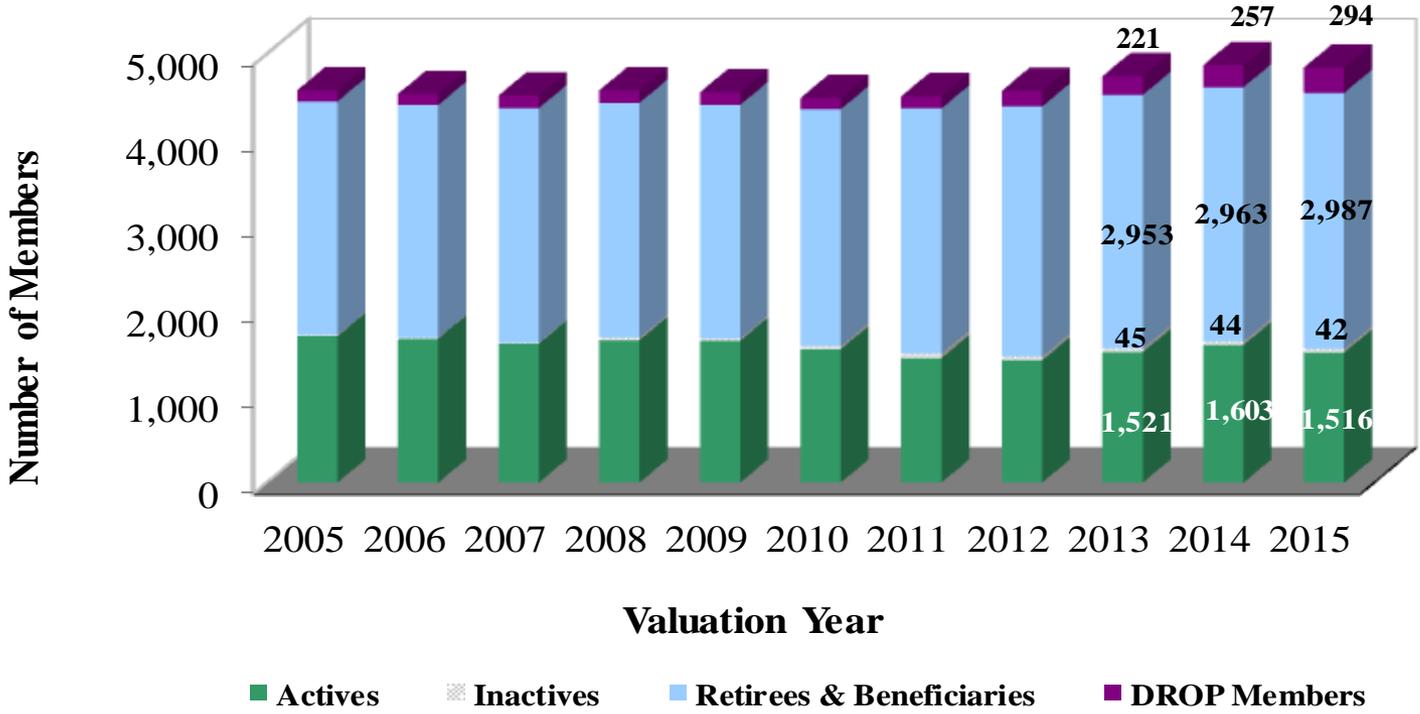
Gabriel Roeder Smith & Company
Consultants & Actuaries
www.gabrielroeder.com

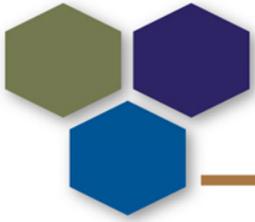
Actuarial Valuation Process



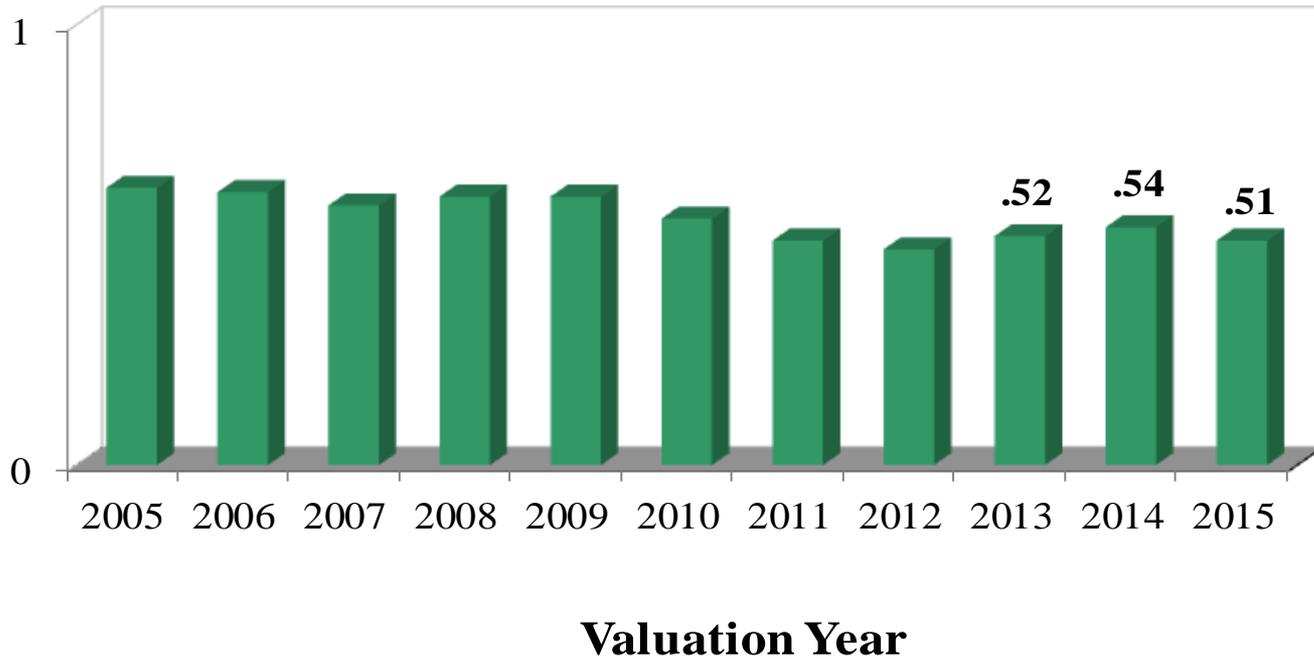


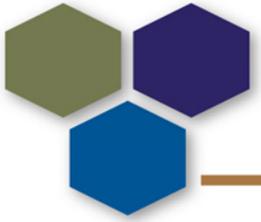
Membership Data



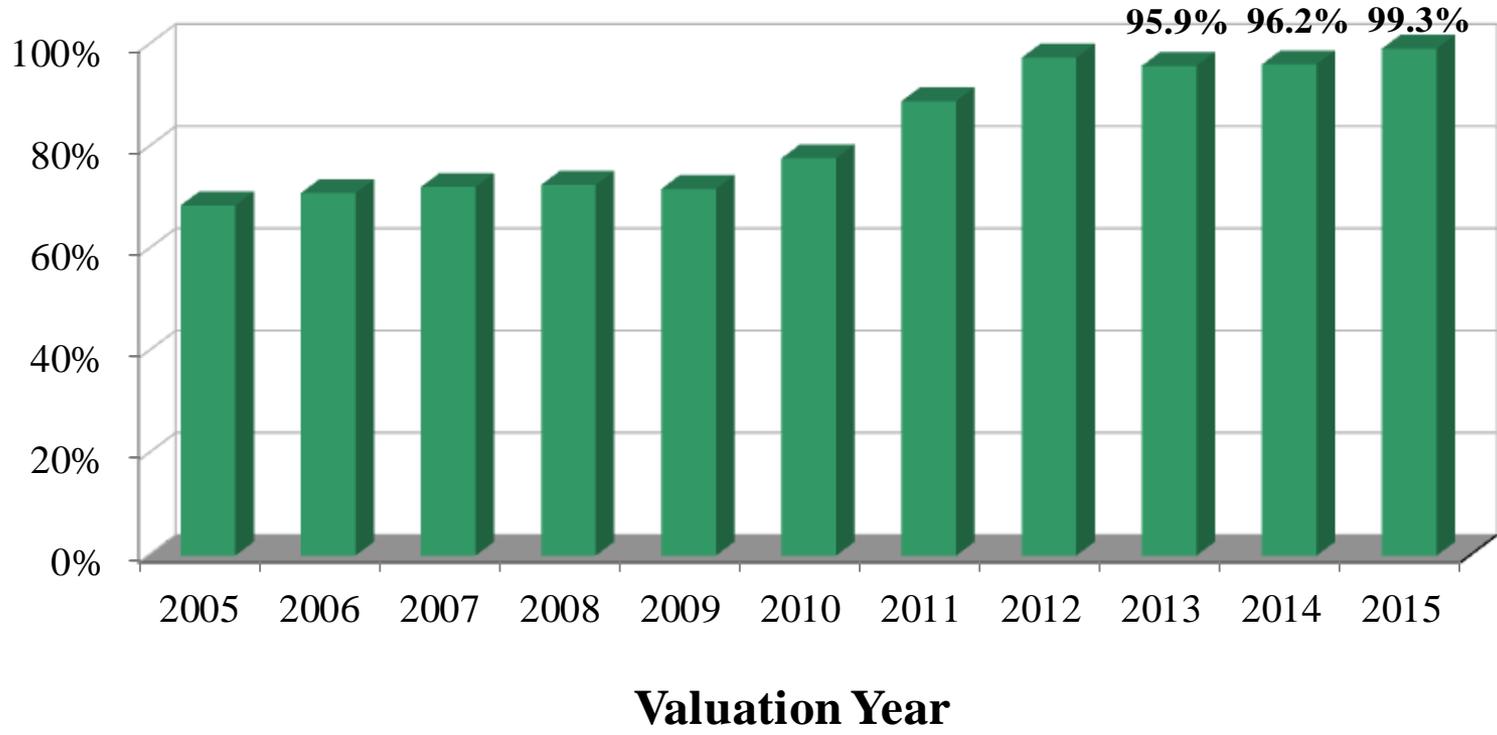


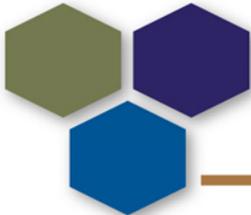
Ratio of Active Members to Pension Benefit Recipients



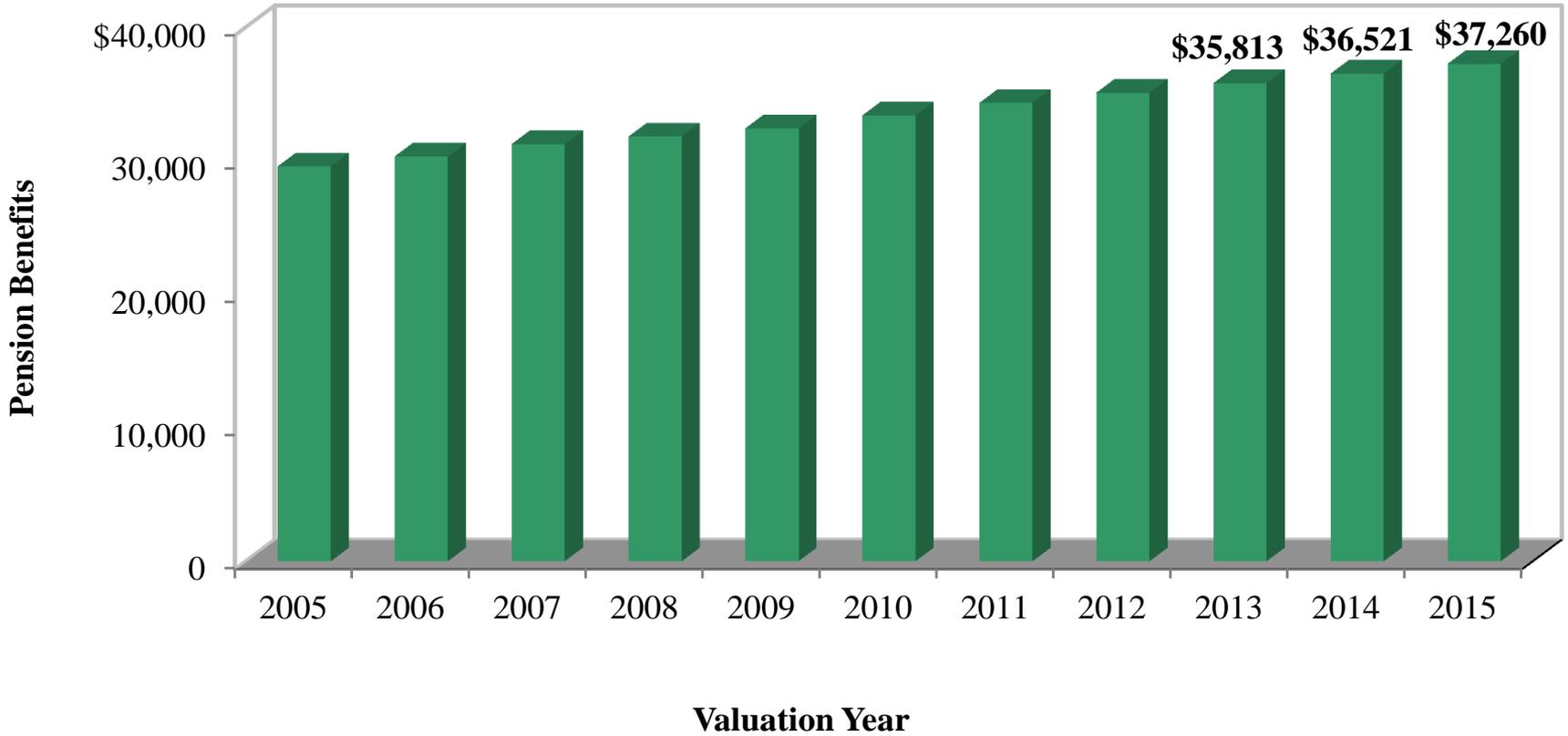


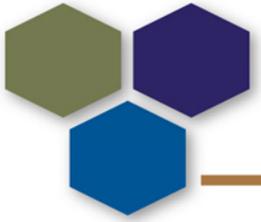
Pension Benefits Expressed as %'s of Active Member Pay



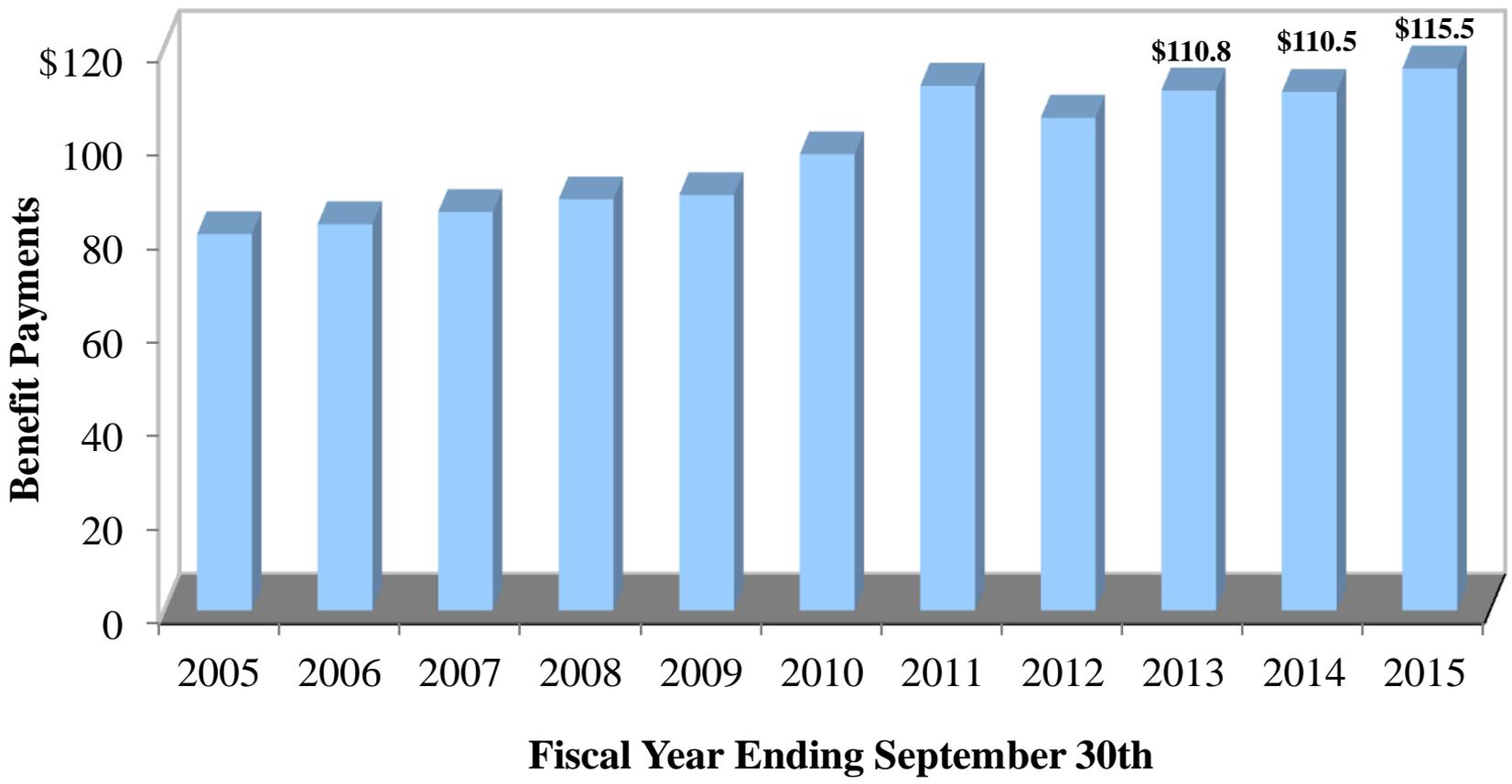


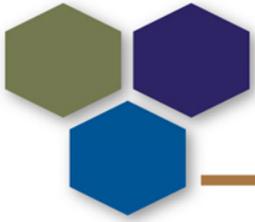
Average Annual Pensions as of September 30th of the Indicated Valuation Year





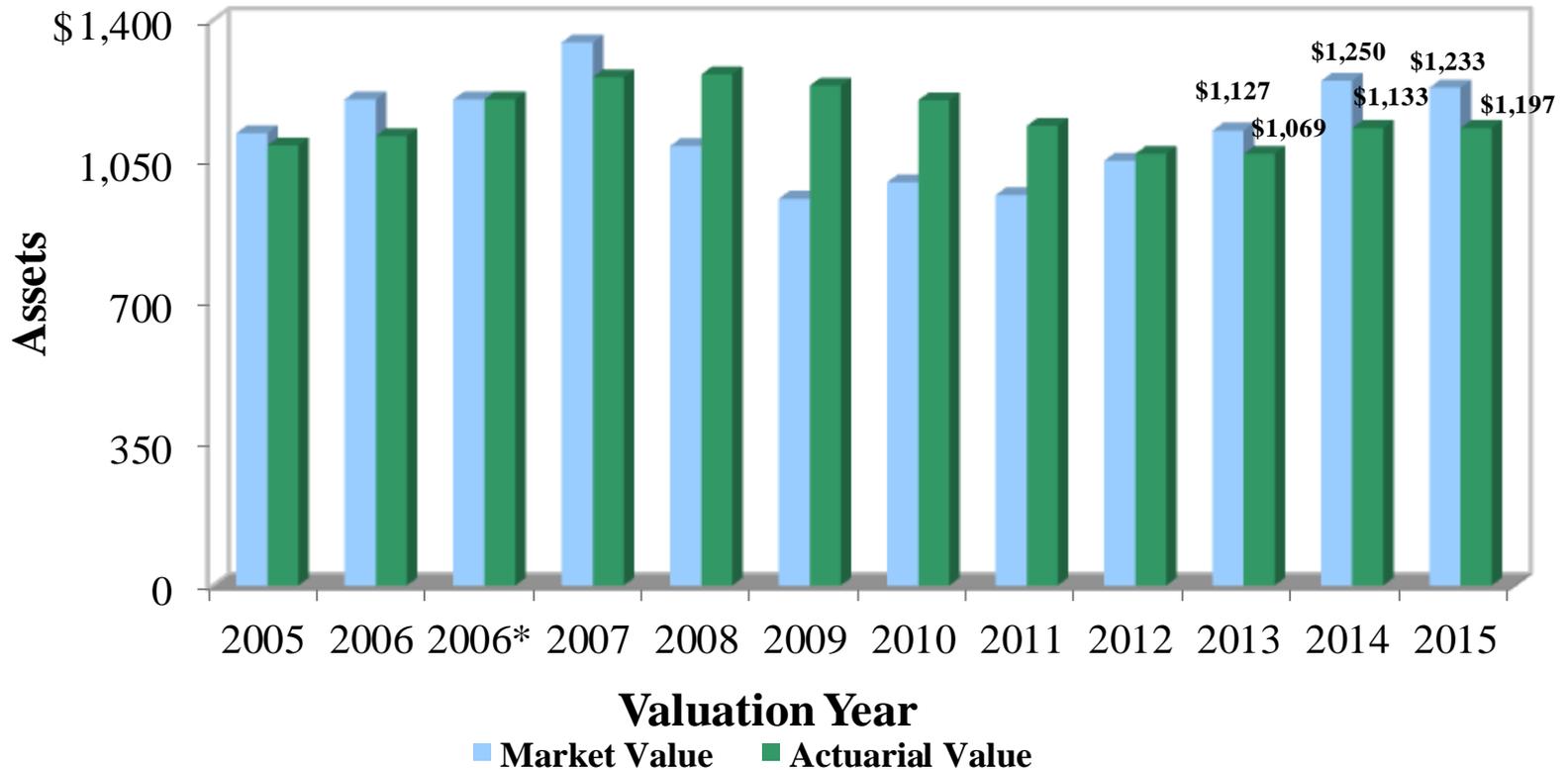
Actual Pension Benefit Payments by Fiscal Year (Amounts in Millions)





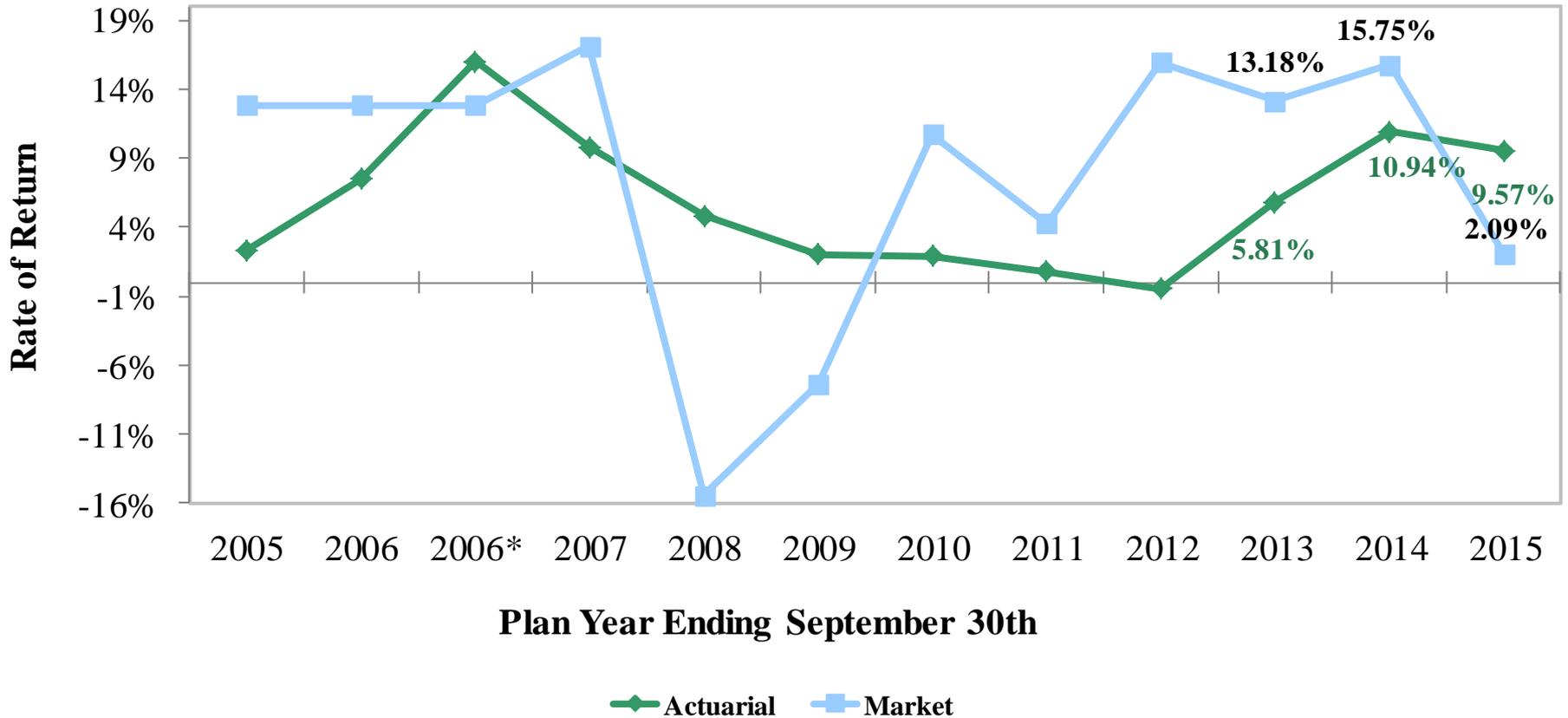
Pension Assets

(Amounts in Millions)



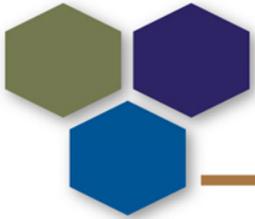
* After adjusting to market value.

Actuarial & Market Net Rates of Return[#]



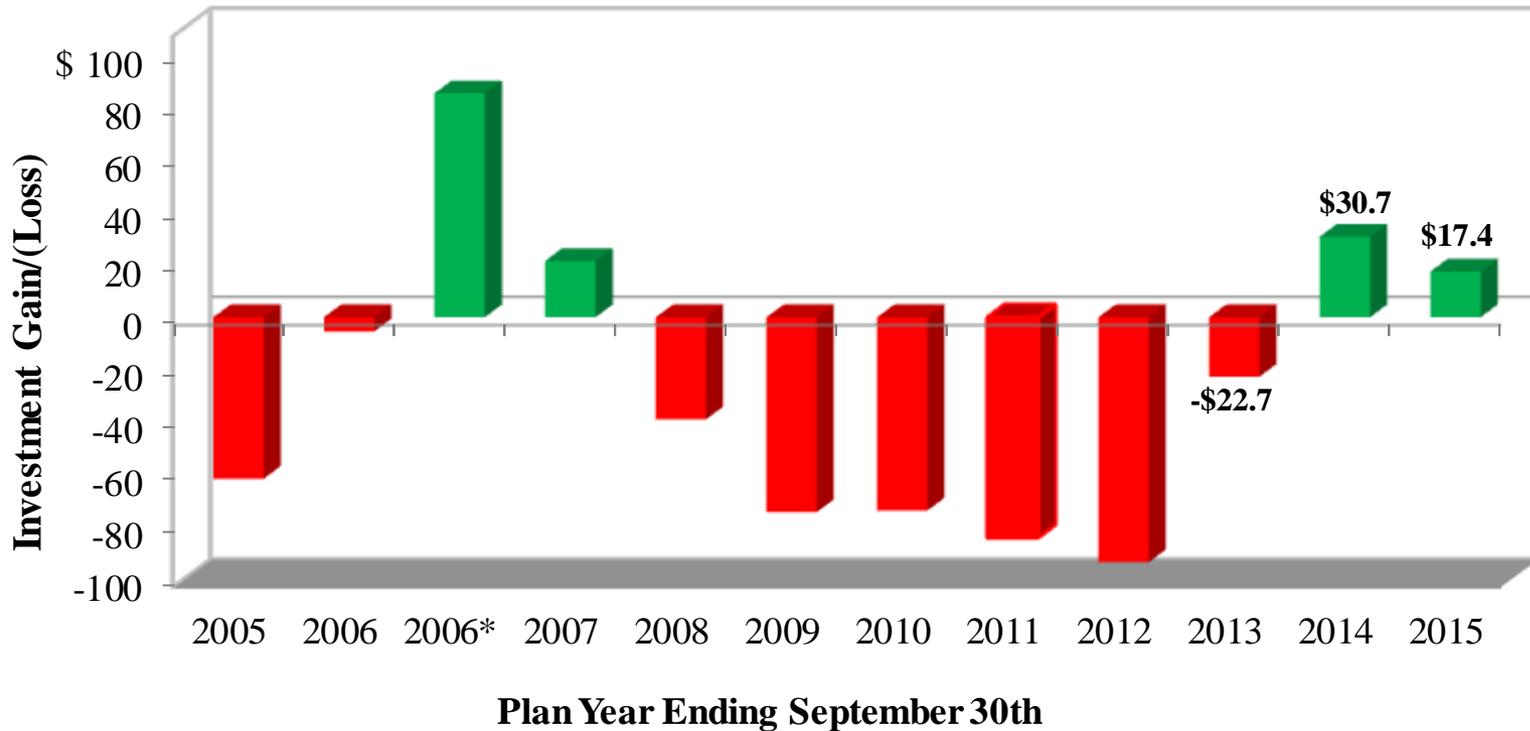
* After adjusting to market value.

Rates of return on Non Hybrid actuarial assets.

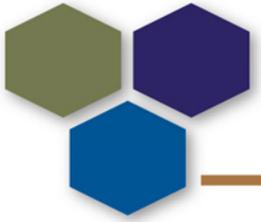


Investment Gain/(Loss)

(Amounts in Millions)

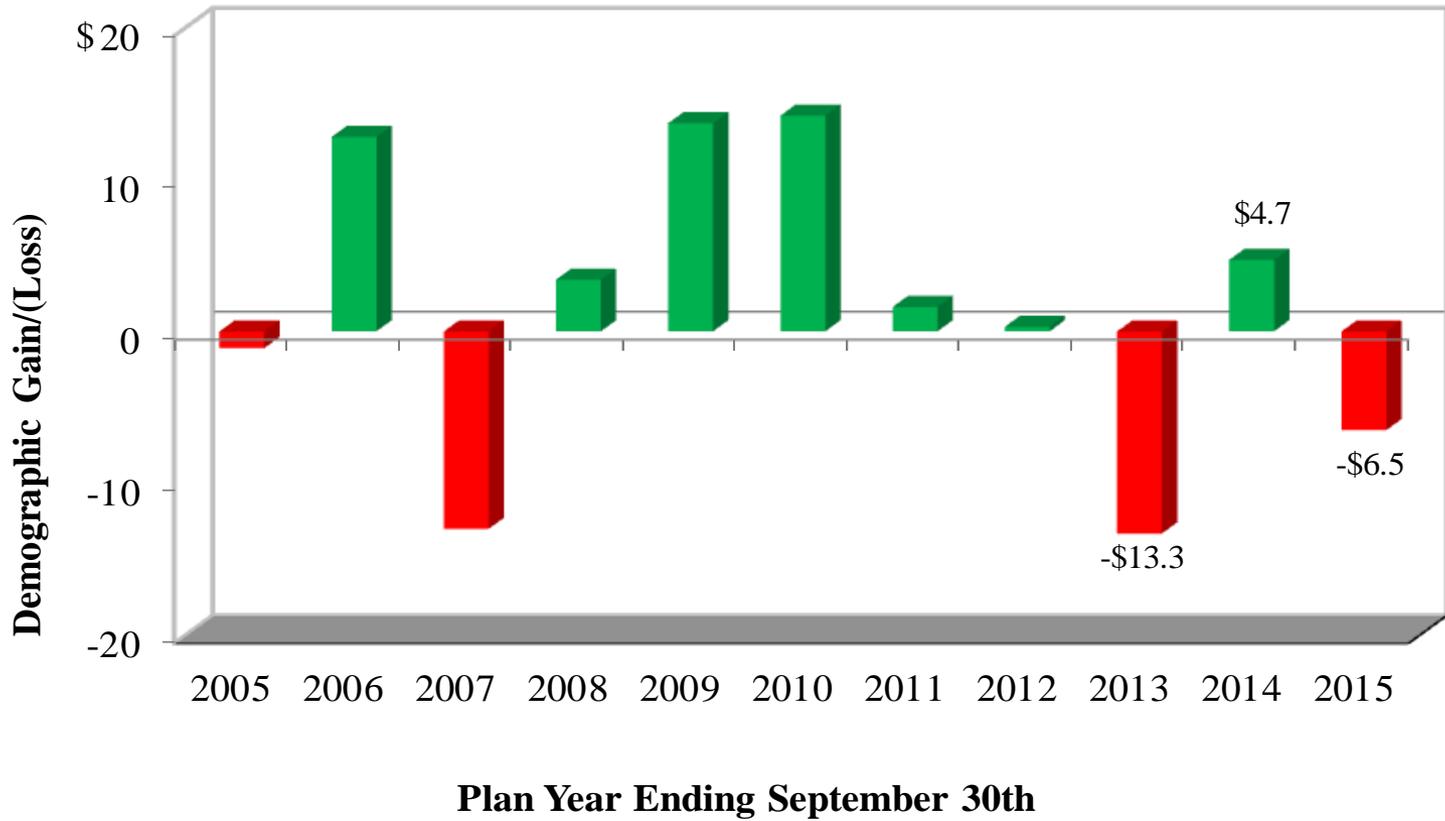


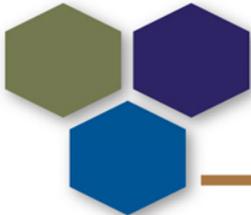
* After adjusting to market value.



Demographic Gain/(Loss)

(Amounts in Millions)



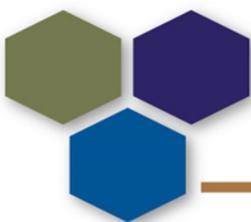


Gain/(Loss) by Type of Activity

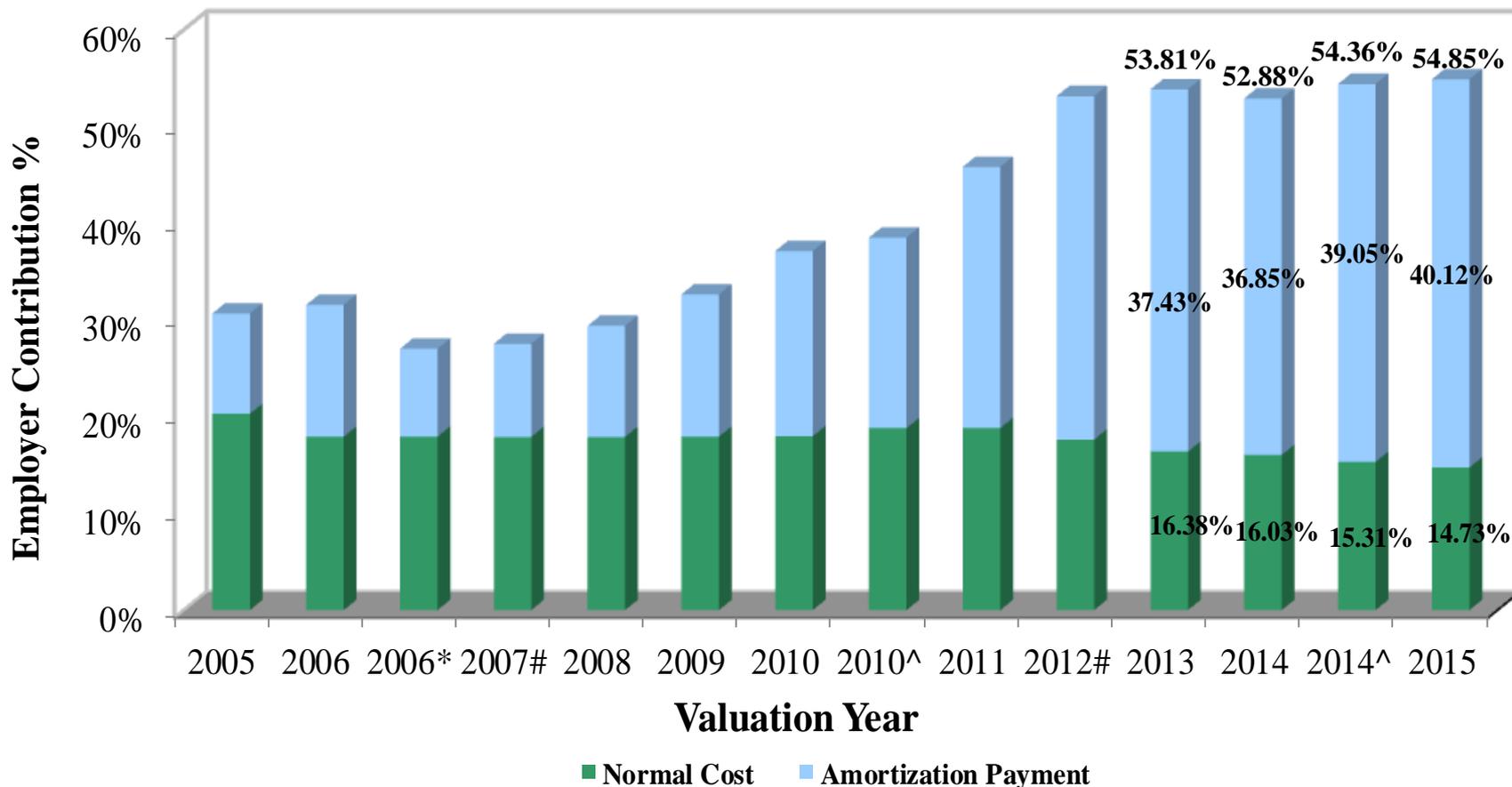
(Amounts in Millions)

Plan Year Ending 9/30	2015	2014	2013	2012	2011	2010
New Entrants *	0.00	0.00	0.00	(0.73)	(0.89)	(0.18)
Retiree Deaths	(0.71)	(2.78)	(6.34)	(5.57)	(5.38)	0.56
Investments	17.43	30.70	(22.72)	(93.39)	(84.04)	(73.67)
Pay Increases	5.40	8.93	(1.34)	11.94	11.74	11.17
Withdrawal	(0.54)	0.42	0.36	(0.02)	0.37	0.90
Retirements	(3.03)	(0.75)	(1.80)	(2.40)	(2.64)	(1.80)
Other	(7.62)	(1.11)	(4.20)	(2.93)	(1.58)	3.55
Total	10.93	35.41	(36.04)	(93.10)	(82.42)	(59.47)

* *New entrants with past service (rehires).*



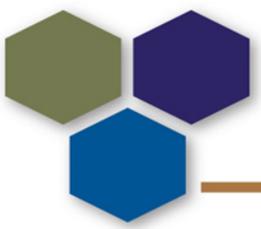
Historical Employer Contribution %'s Valuation as of September 30



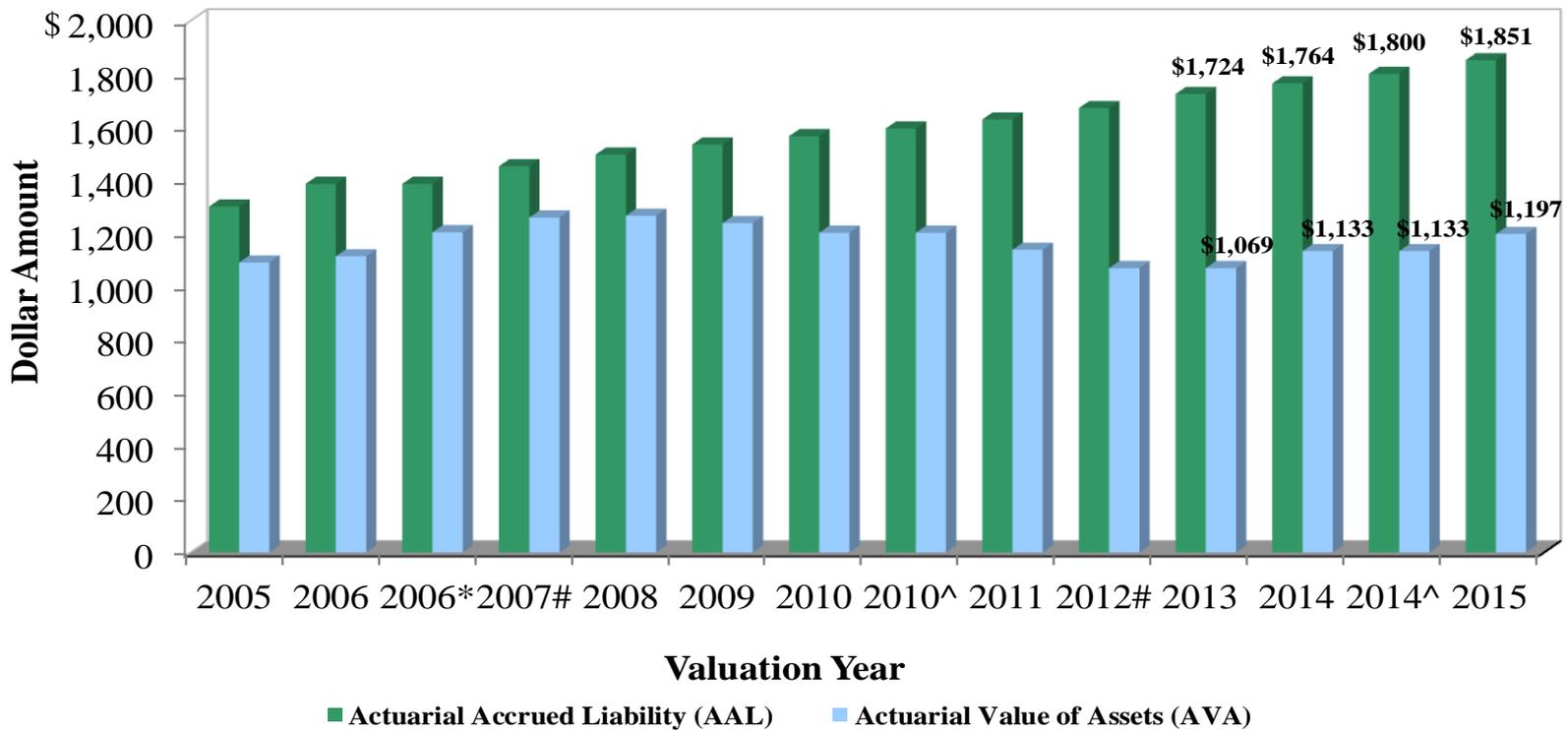
* After adjusting to market value.

Revised benefit provisions.

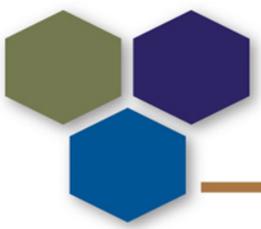
^ Revised actuarial assumptions.



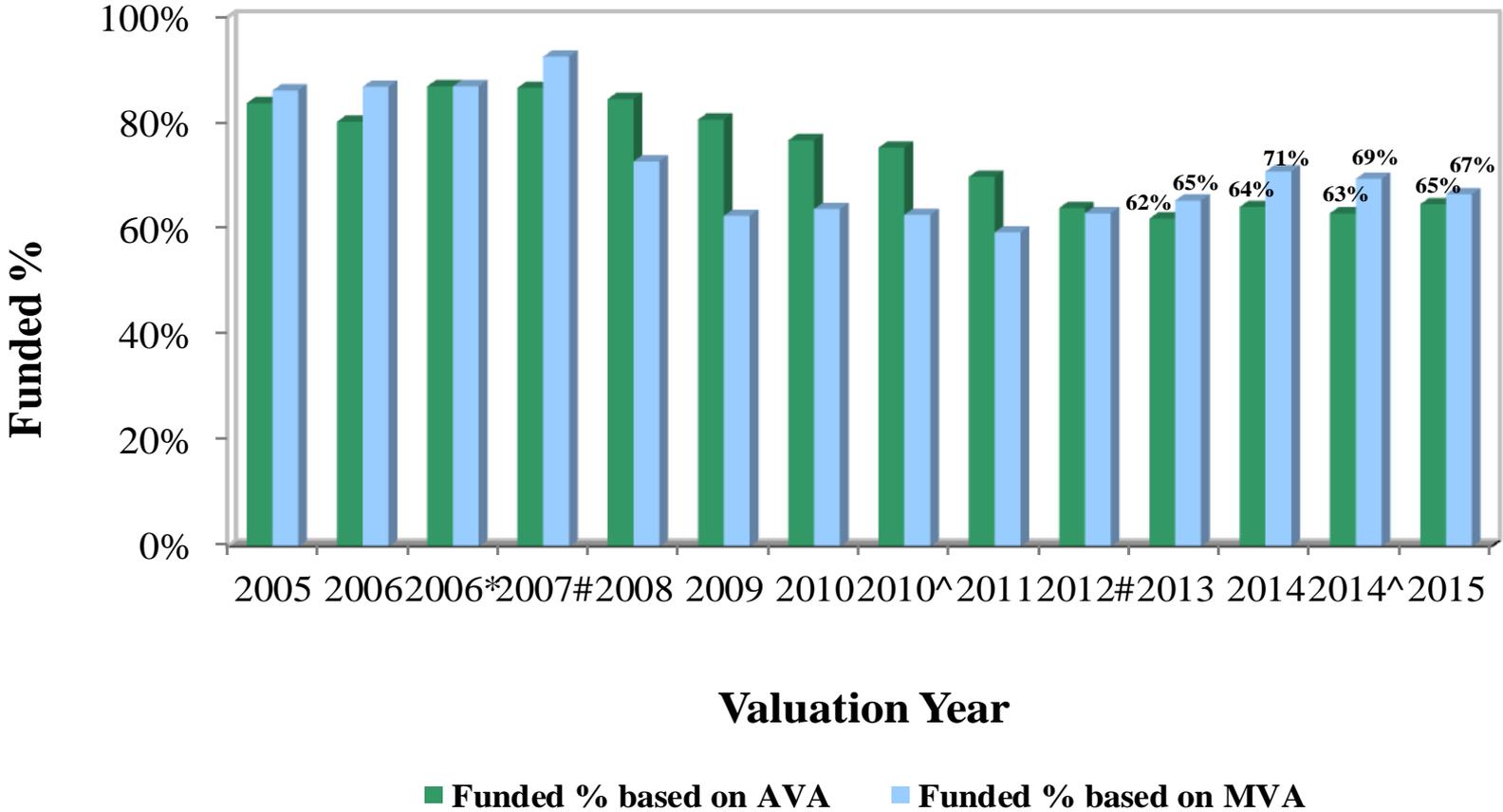
Actuarial Accrued Liability Compared to Actuarial Value of Assets (in millions)



* After adjusting to market value.
Revised benefit provisions.
^ Revised actuarial assumptions.

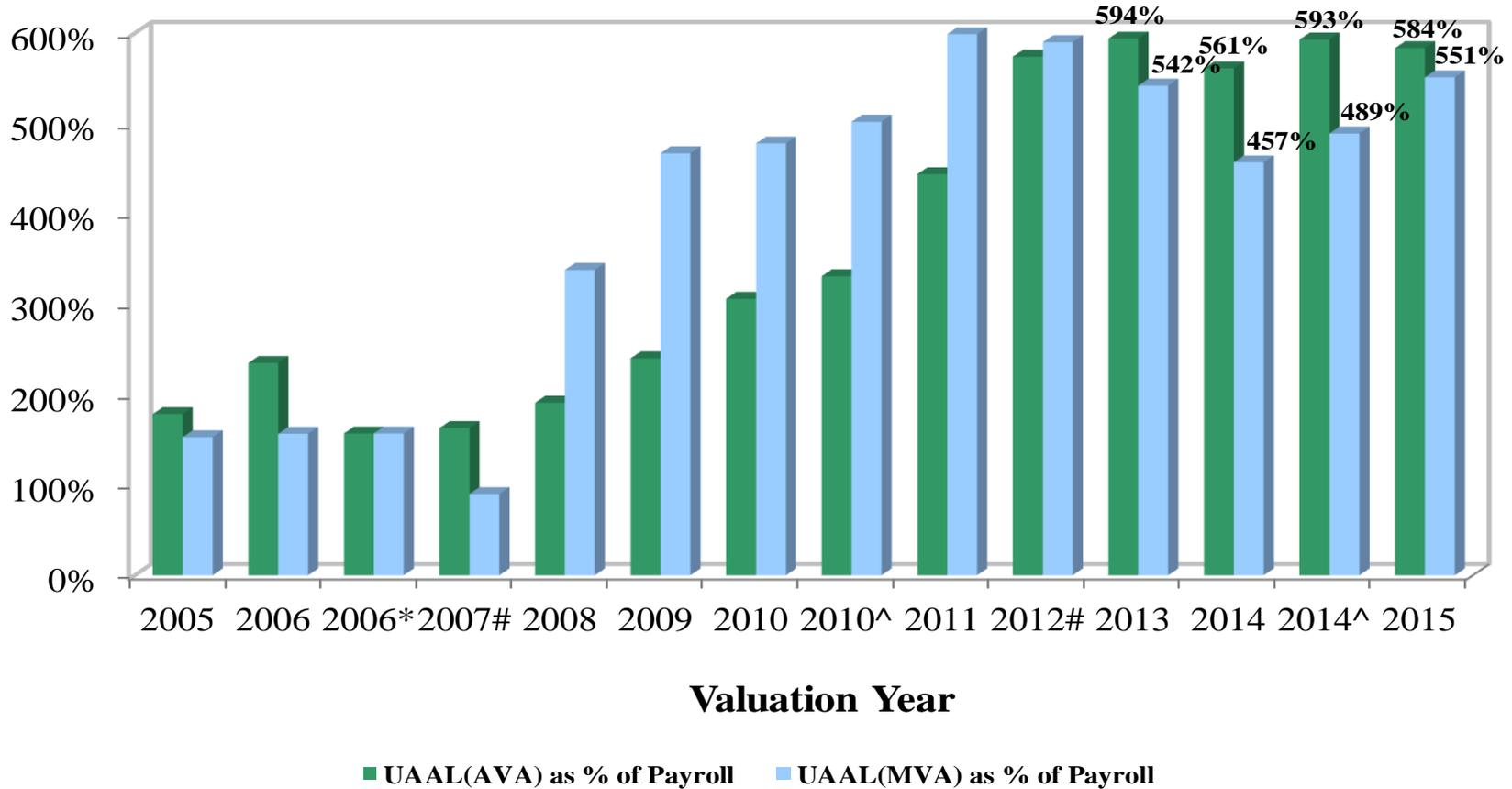


Retirement System Funded % Based on Actuarial Value and Market Value of Assets



* After adjusting to market value.
Revised benefit provisions.
^ Revised actuarial assumptions.

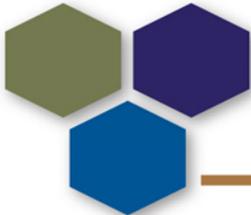
Unfunded as Percentage of Payroll



* After adjusting to market value.

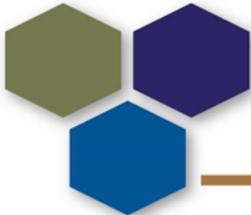
Revised benefit provisions.

^ Revised actuarial assumptions



Comment on the Investment Markets and Other Issues

- ◆ Investment markets have been very volatile
- ◆ Valuation is based on a 5-year smoothed value of assets
 - ▶ Reduces the volatility of the valuation results
- ◆ 9/30/15 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
 - ▶ Needed mostly for Hybrid Plan members
 - ▶ Review factors based on recent experience study



Disclaimers

- ◆ This presentation is intended to be used in conjunction with the September 30, 2015 pension annual actuarial valuation report issued on April 19, 2016. This presentation should not be relied on for any purpose other than the purpose described in the valuation report.
- ◆ Circular 230 Notice: Pursuant to regulations issued by the IRS, to the extent this presentation concerns tax matters, it is not intended or written to be used, and cannot be used, for the purpose of (i) avoiding tax-related penalties under the Internal Revenue Code or (ii) marketing or recommending to another party any tax-related matter addressed within. Each taxpayer should seek advice based on the individual's circumstances from an independent tax advisor.
- ◆ 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 opinion contained herein.