

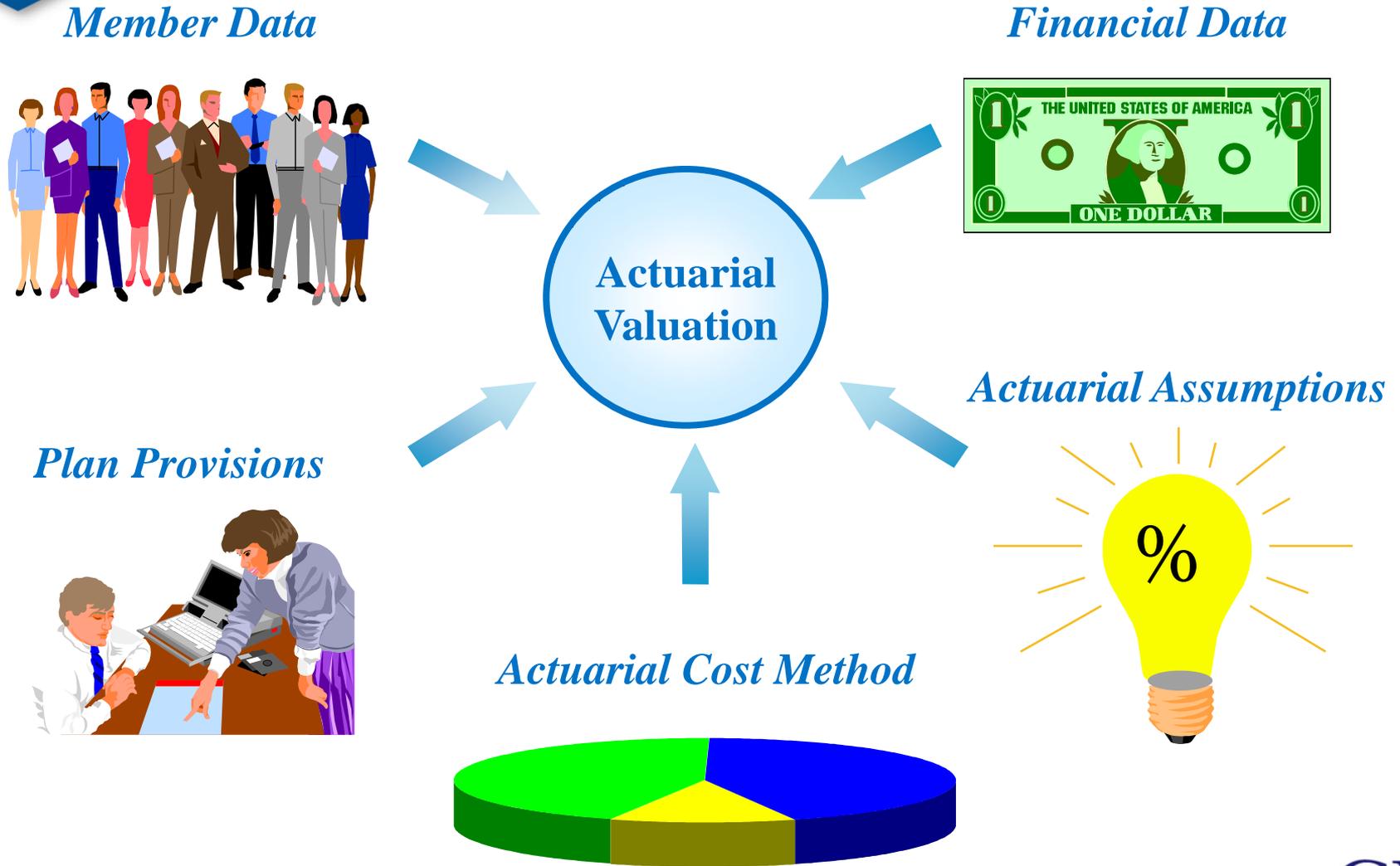
# Michigan State Police Retirement System

Pension Actuarial Valuation Results  
as of September 30, 2012



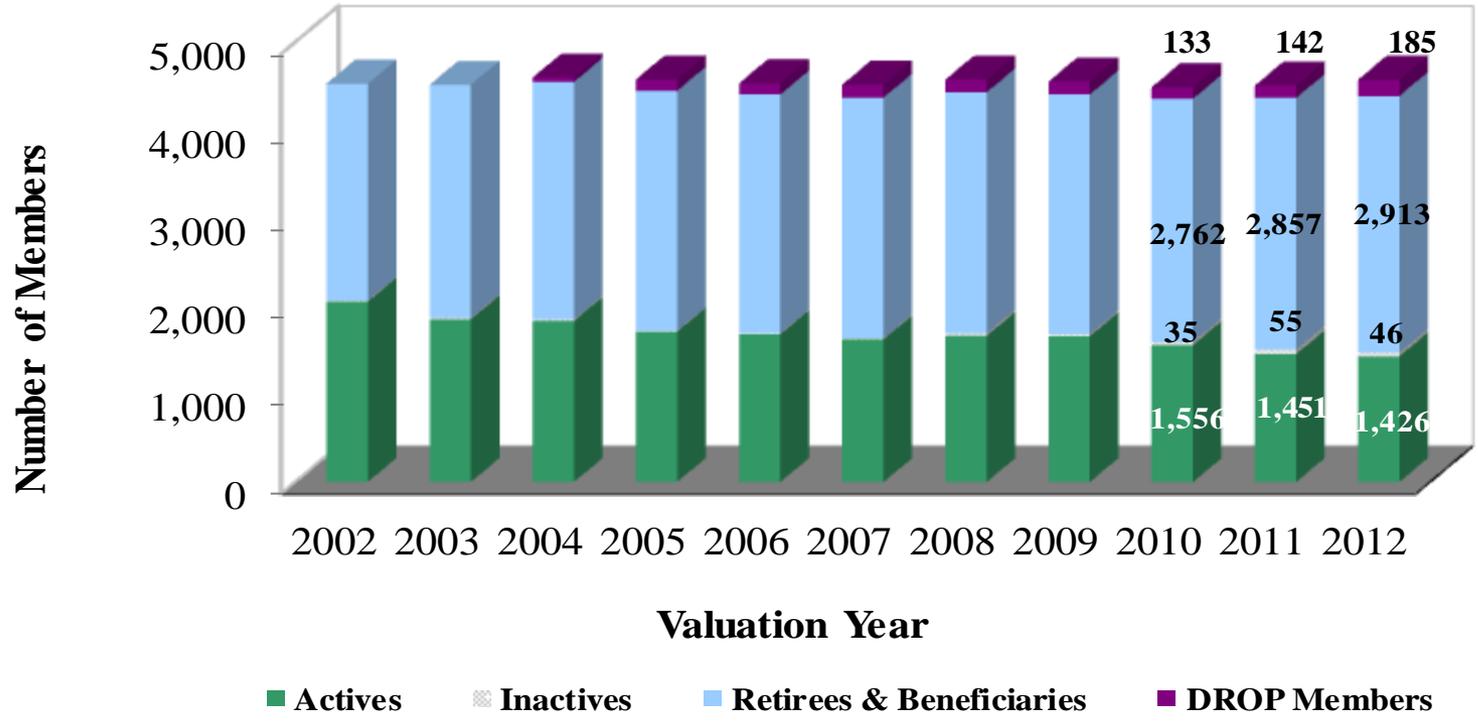
**Gabriel Roeder Smith & Company**  
Consultants & Actuaries  
[www.gabrielroeder.com](http://www.gabrielroeder.com)

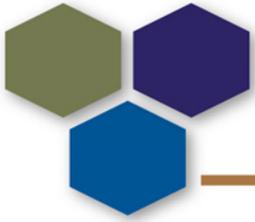
# Actuarial Valuation Process



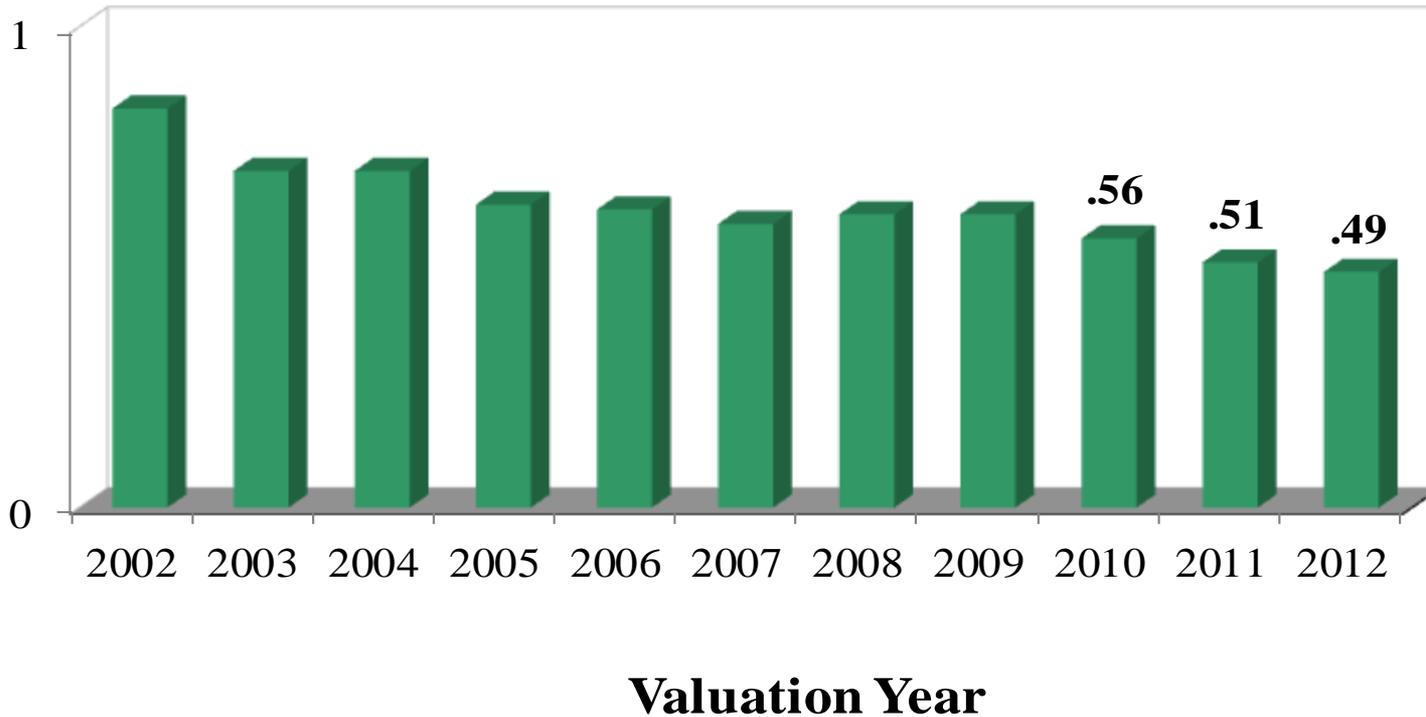


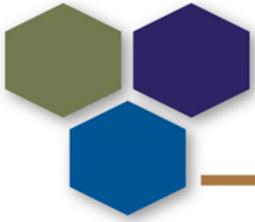
# Membership Data



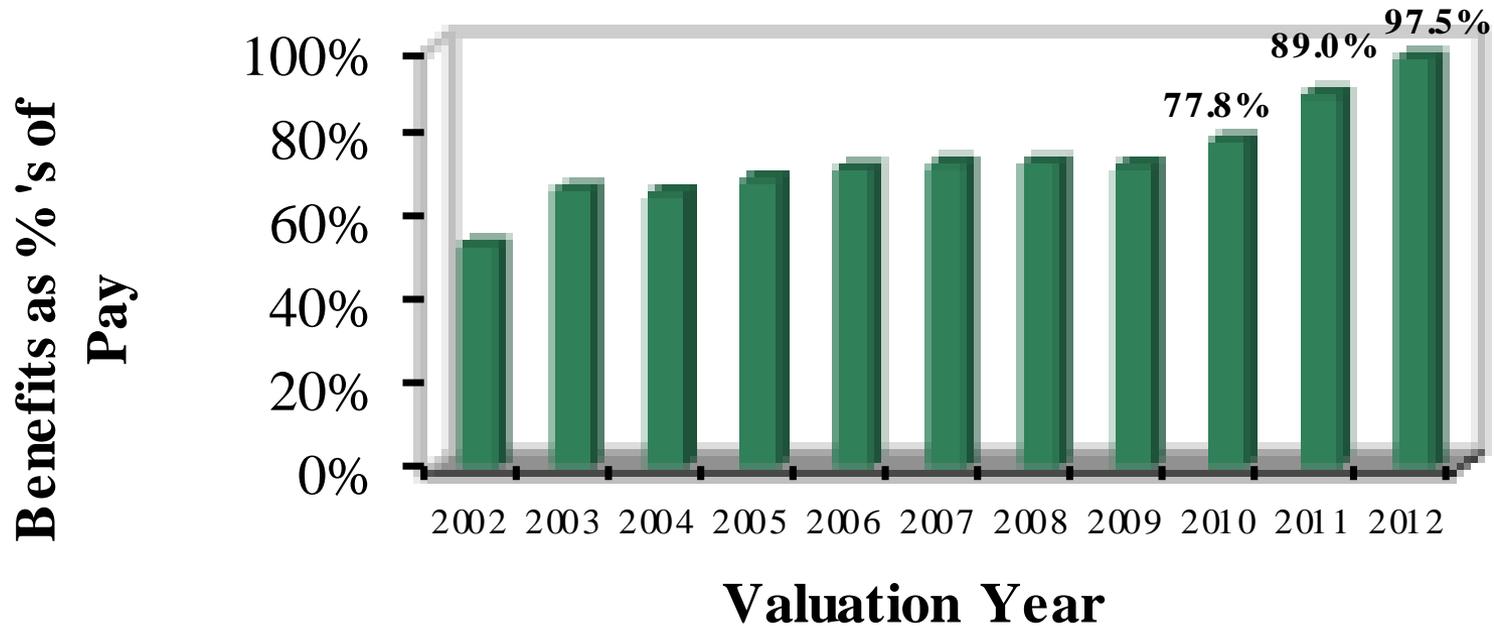


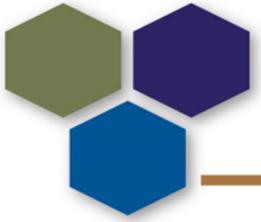
# Ratio of Active Members to Pension Benefit Recipients



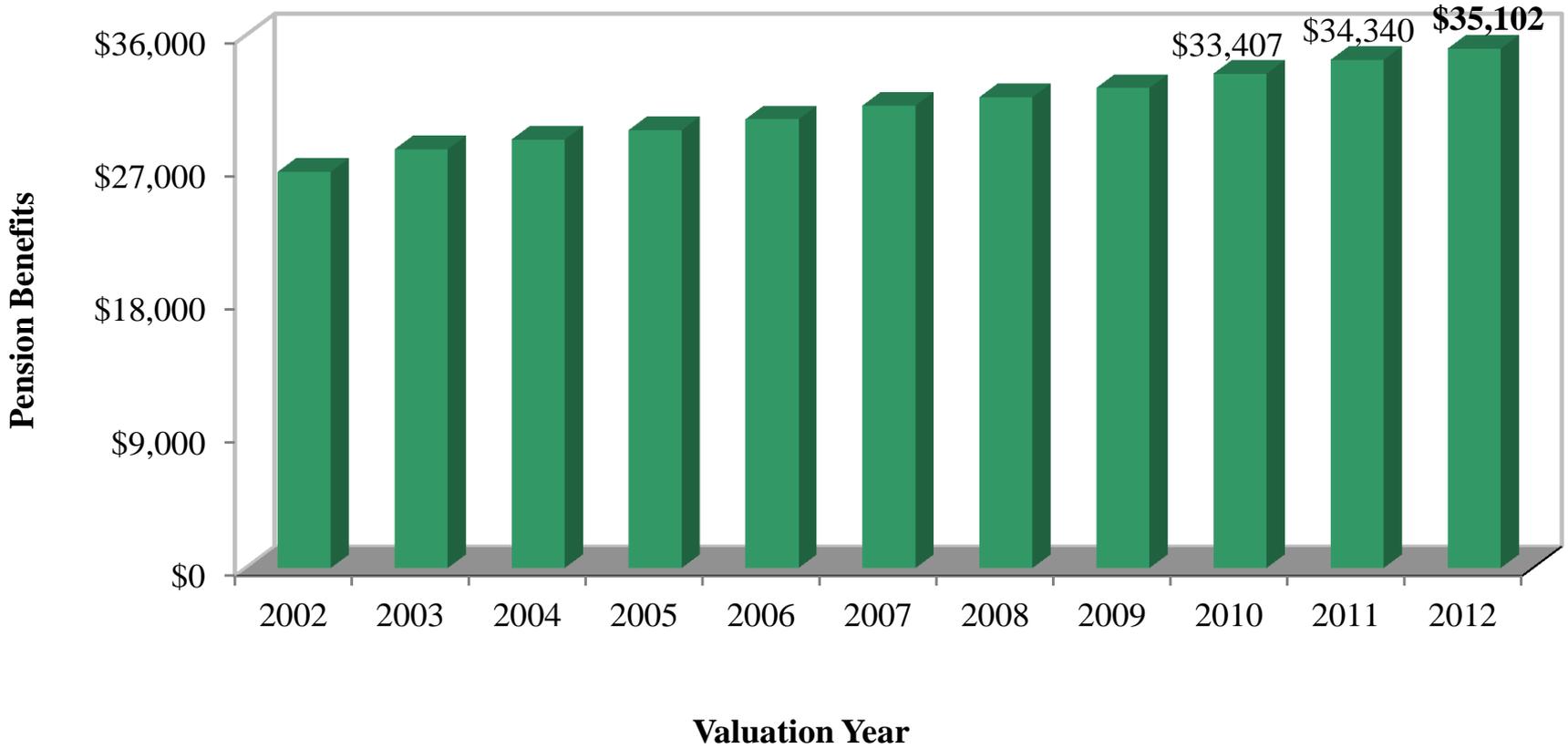


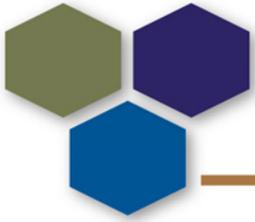
# Pension Benefits Expressed as %'s of Active Member Pay



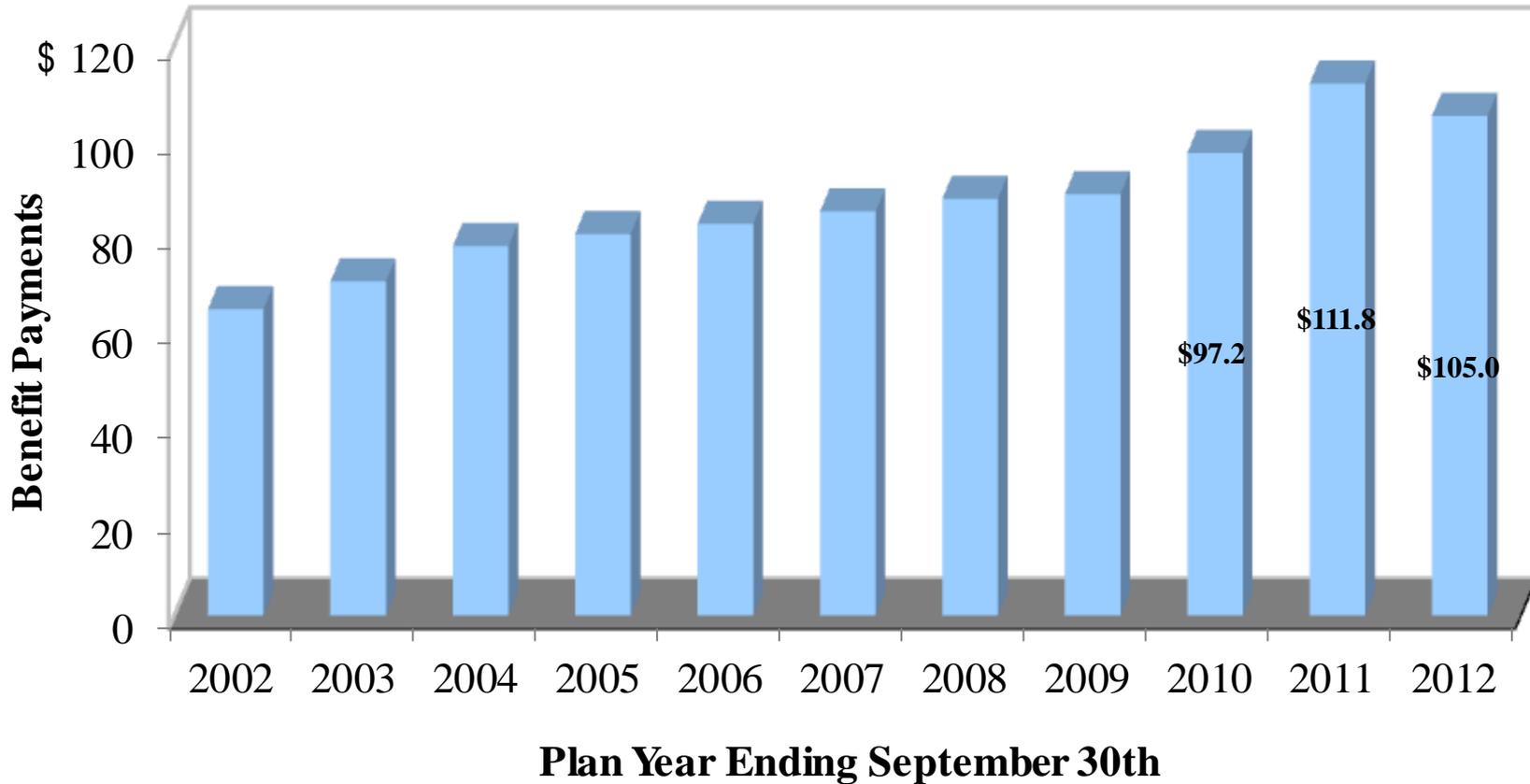


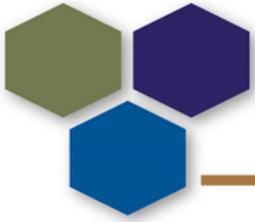
# Average Annual Pensions As of September 30<sup>th</sup> of the Indicated Valuation Year





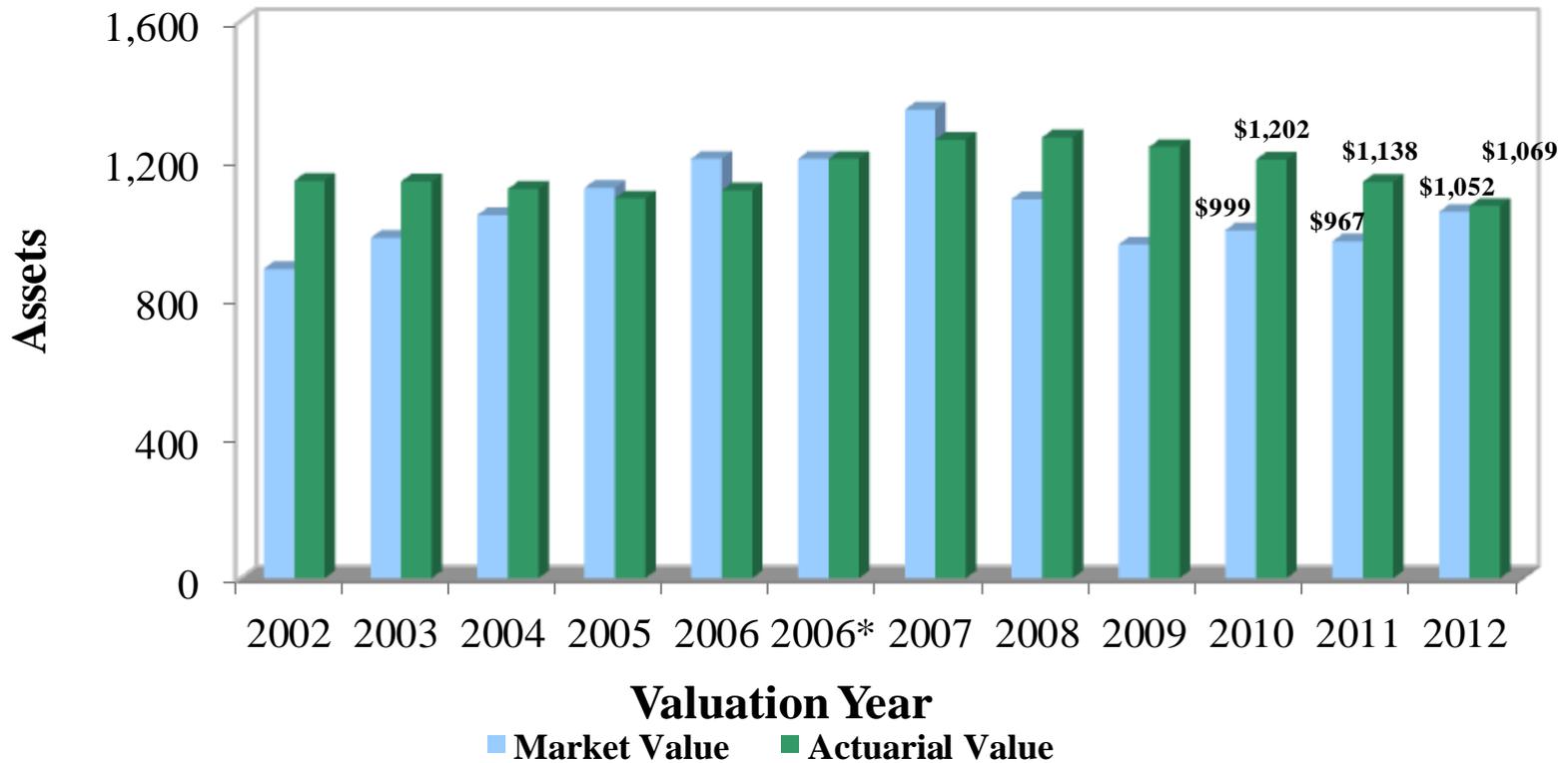
# Actual Pension Benefit Payments by Fiscal Year (Amounts in Millions)





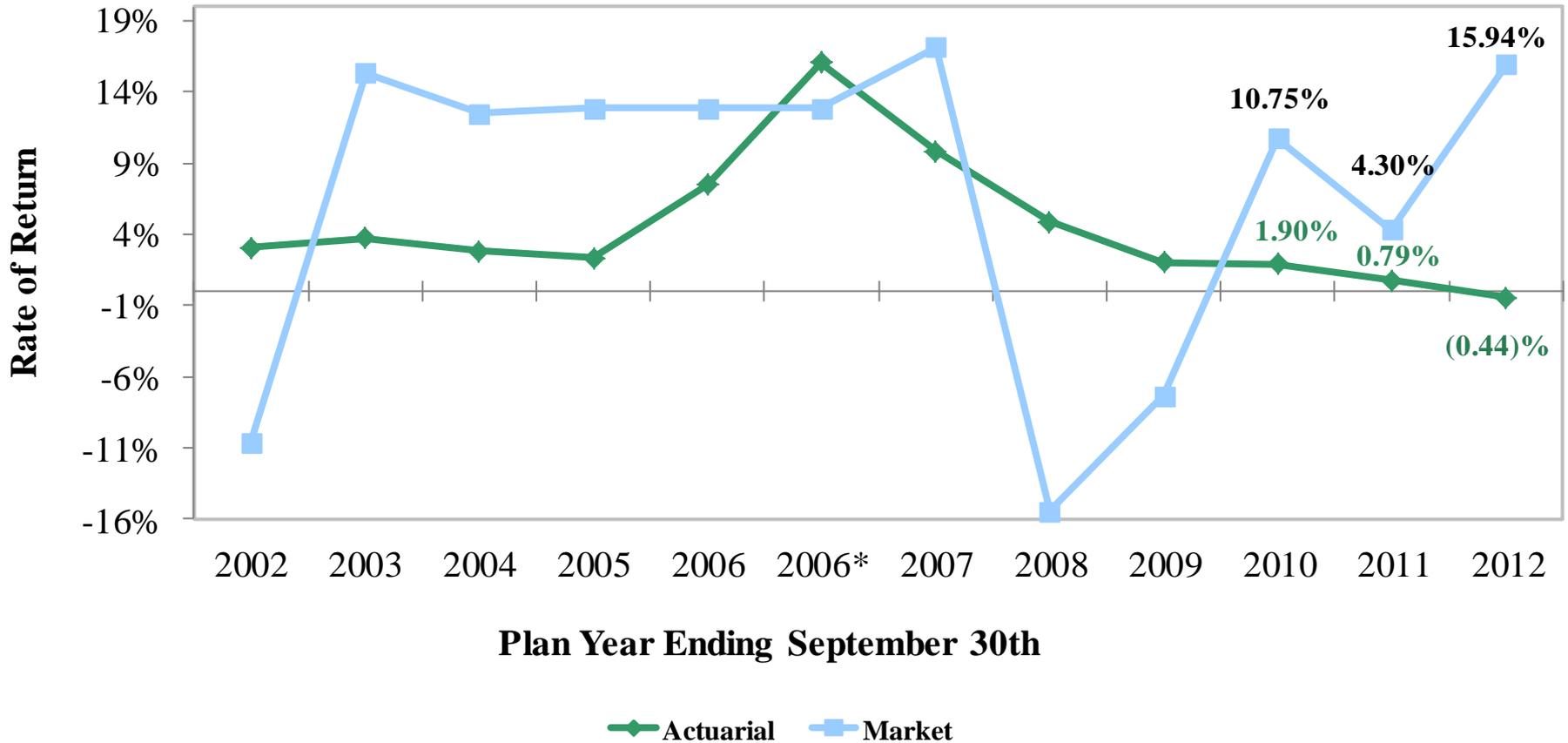
# Pension Assets

(Amounts in Millions)

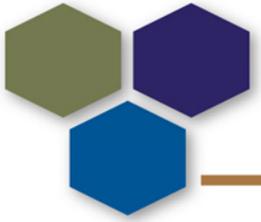


\* After adjusting to market value.

# Actuarial & Market Net Rates of Return

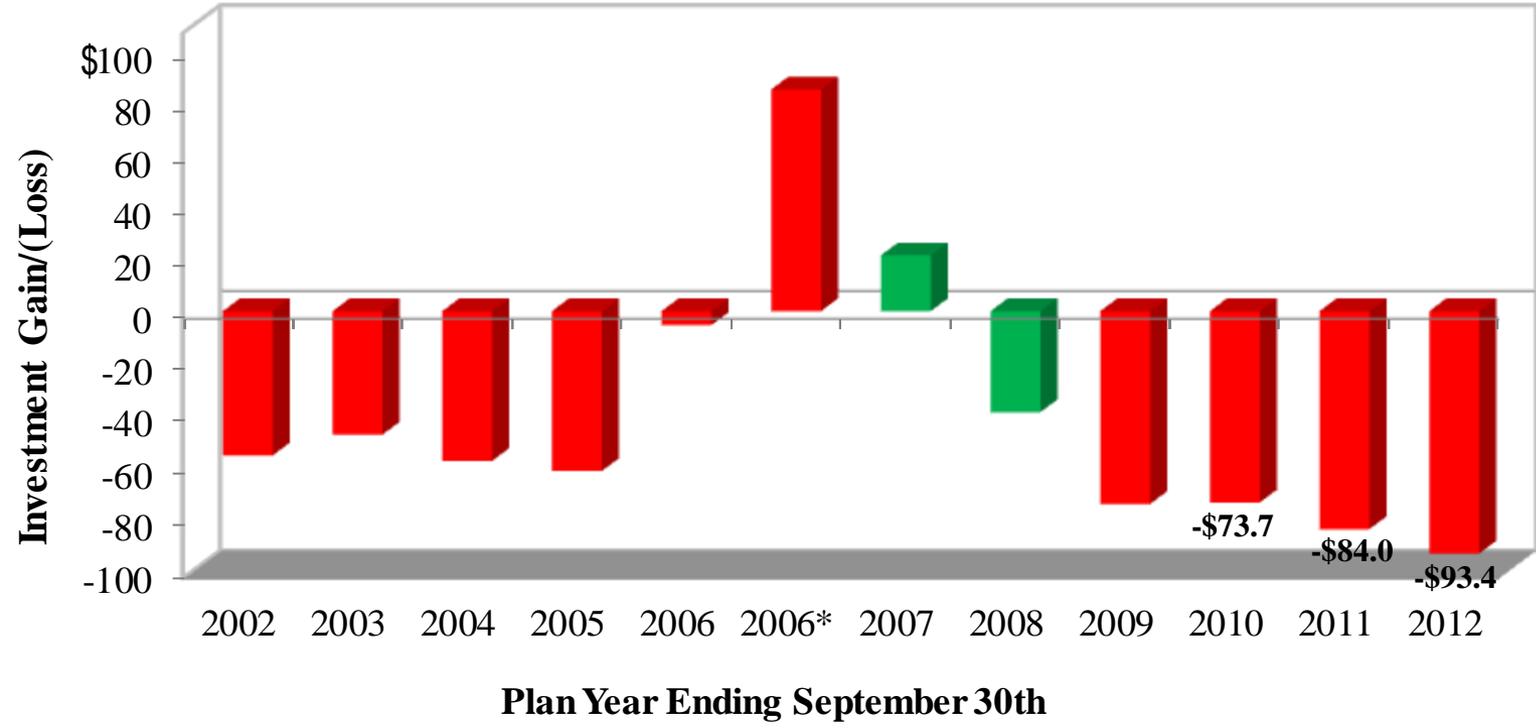


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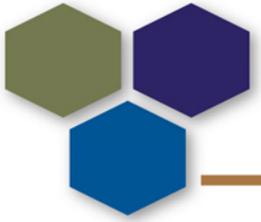


# Investment Gain/(Loss)

(Amounts in Millions)

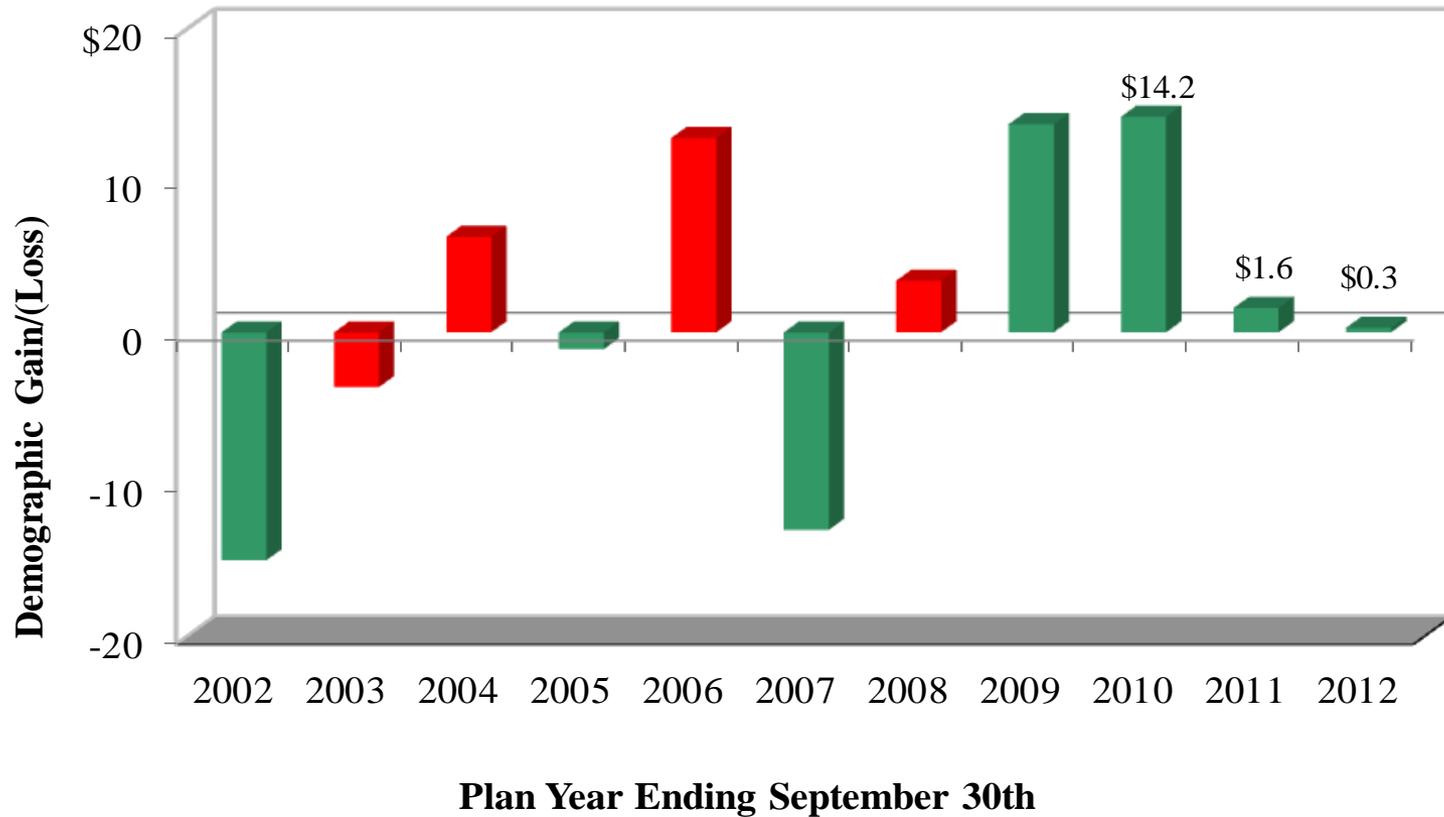


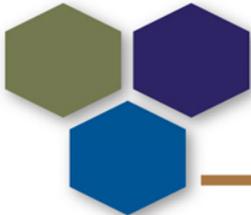
\* After adjusting to market value.



# Demographic Gain/(Loss)

(Amounts in Millions)





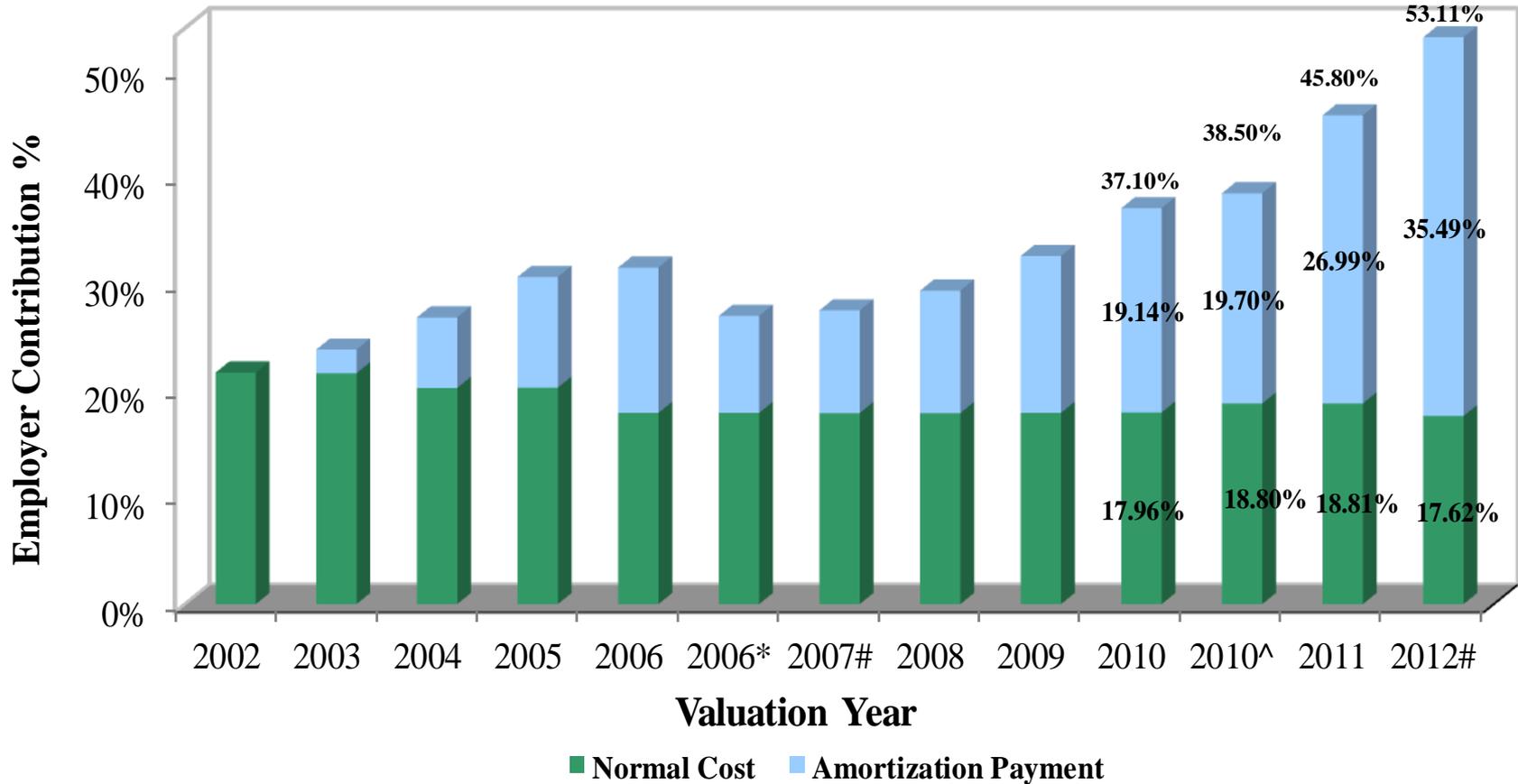
# Gain/(Loss) by Type of Activity

(Amounts in Millions)

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Plan Year Ending 9/30	2012	2011	2010	2009	2008	2007
New Entrants	(0.73)	(0.89)	(0.18)	(0.83)	(0.16)	0.00
Retiree Deaths	(5.57)	(5.38)	0.56	(1.68)	(3.98)	(3.98)
Investments	(93.39)	(84.04)	(73.67)	(74.30)	(38.88)	21.47
Pay Increases	11.94	11.74	11.17	13.08	3.74	(4.87)
Withdrawal	(0.02)	0.37	0.90	0.43	2.44	0.41
Retirements	(2.40)	(2.64)	(1.80)	2.17	1.15	(2.12)
Other	(2.93)	(1.58)	3.55	0.52	0.20	(2.44)
<b>Total</b>	<b>(93.10)</b>	<b>(82.42)</b>	<b>(59.47)</b>	<b>(60.61)</b>	<b>(35.49)</b>	<b>8.47</b>

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

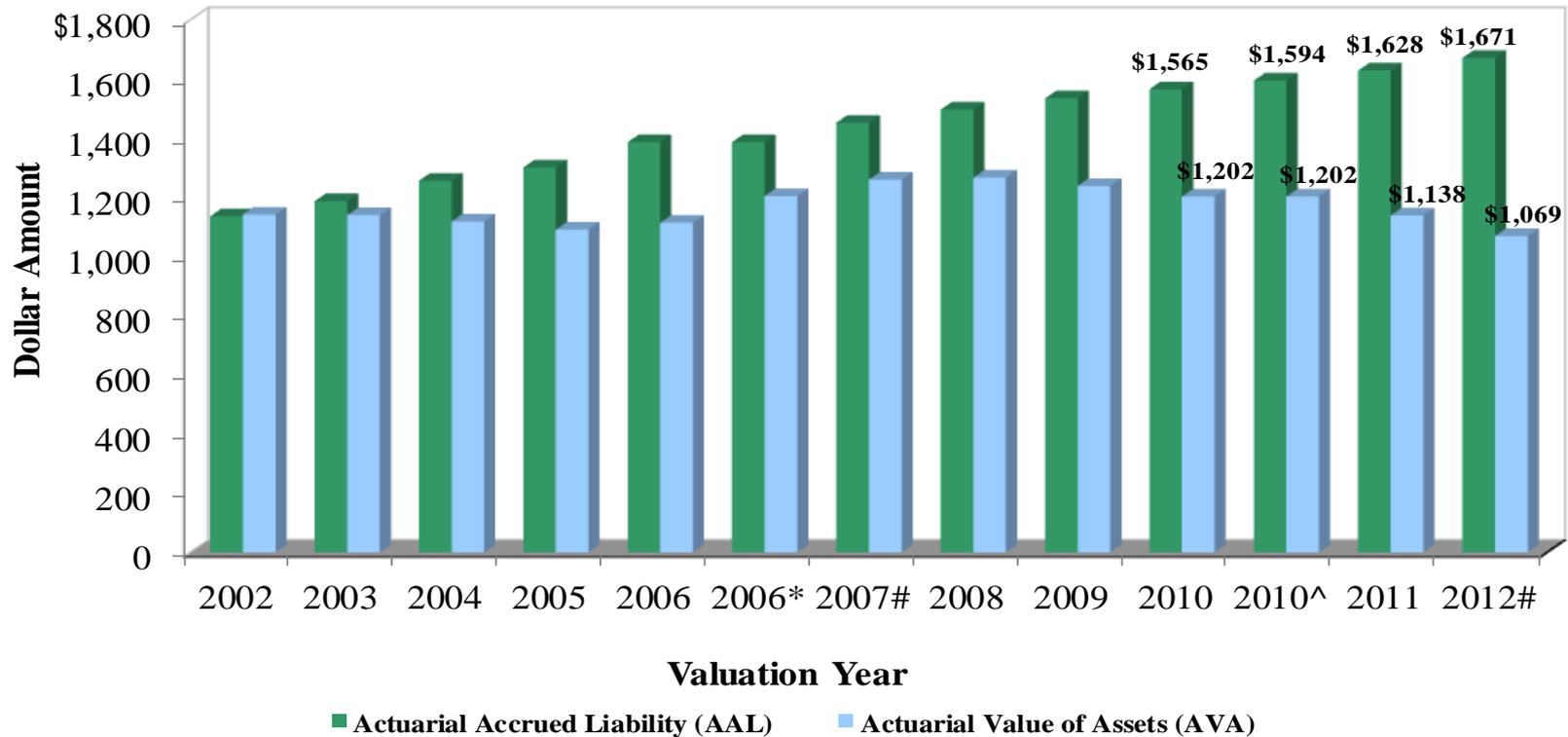


\* After adjusting to market value.

# Revised benefit provisions.

^ Revised actuarial assumptions.

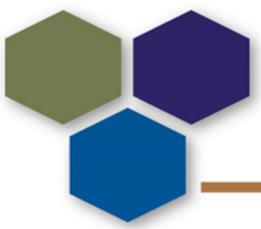
# Actuarial Accrued Liability Compared to Actuarial Value of Assets (in millions)



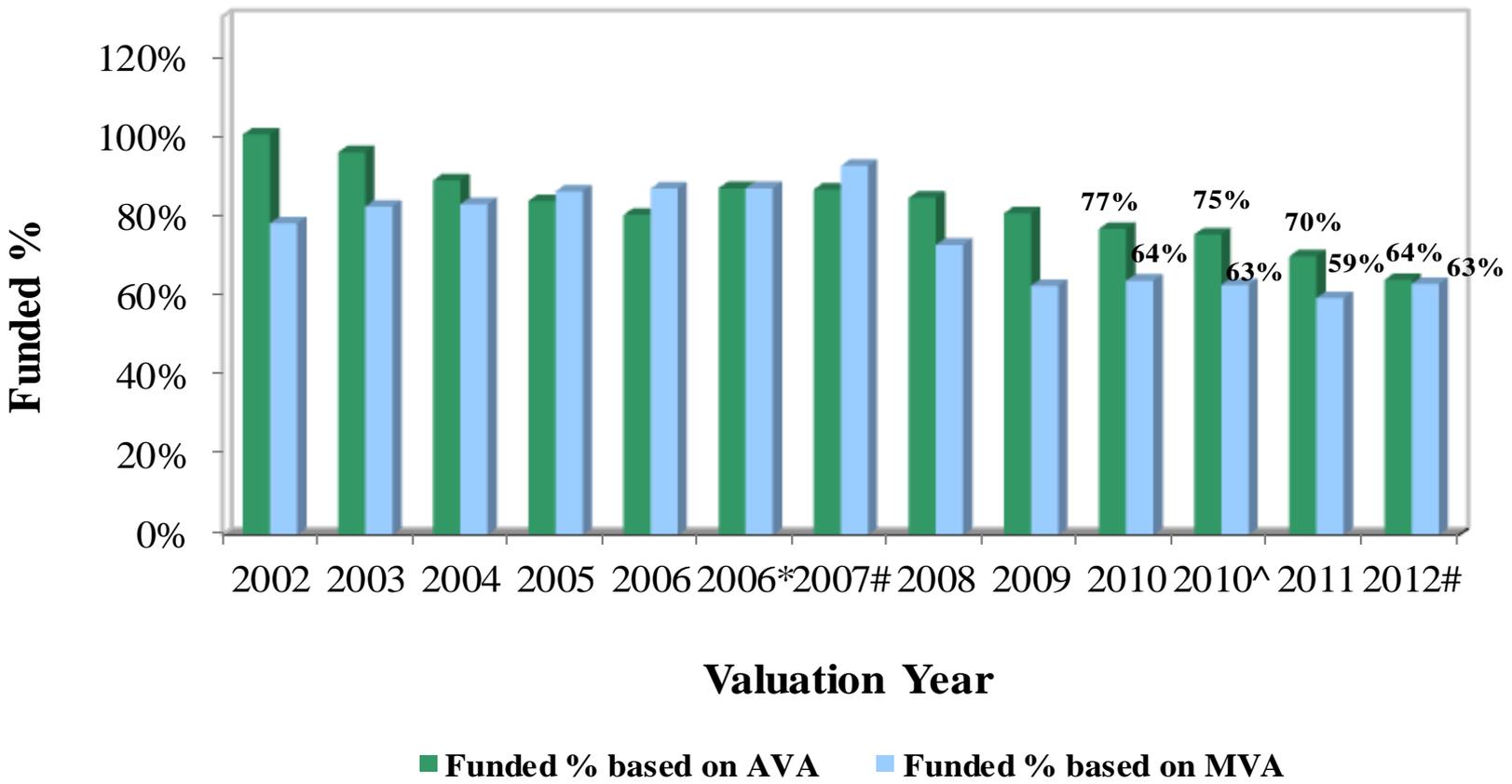
\* After adjusting to market value.

# Revised benefit provisions.

^ Revised actuarial assumptions.

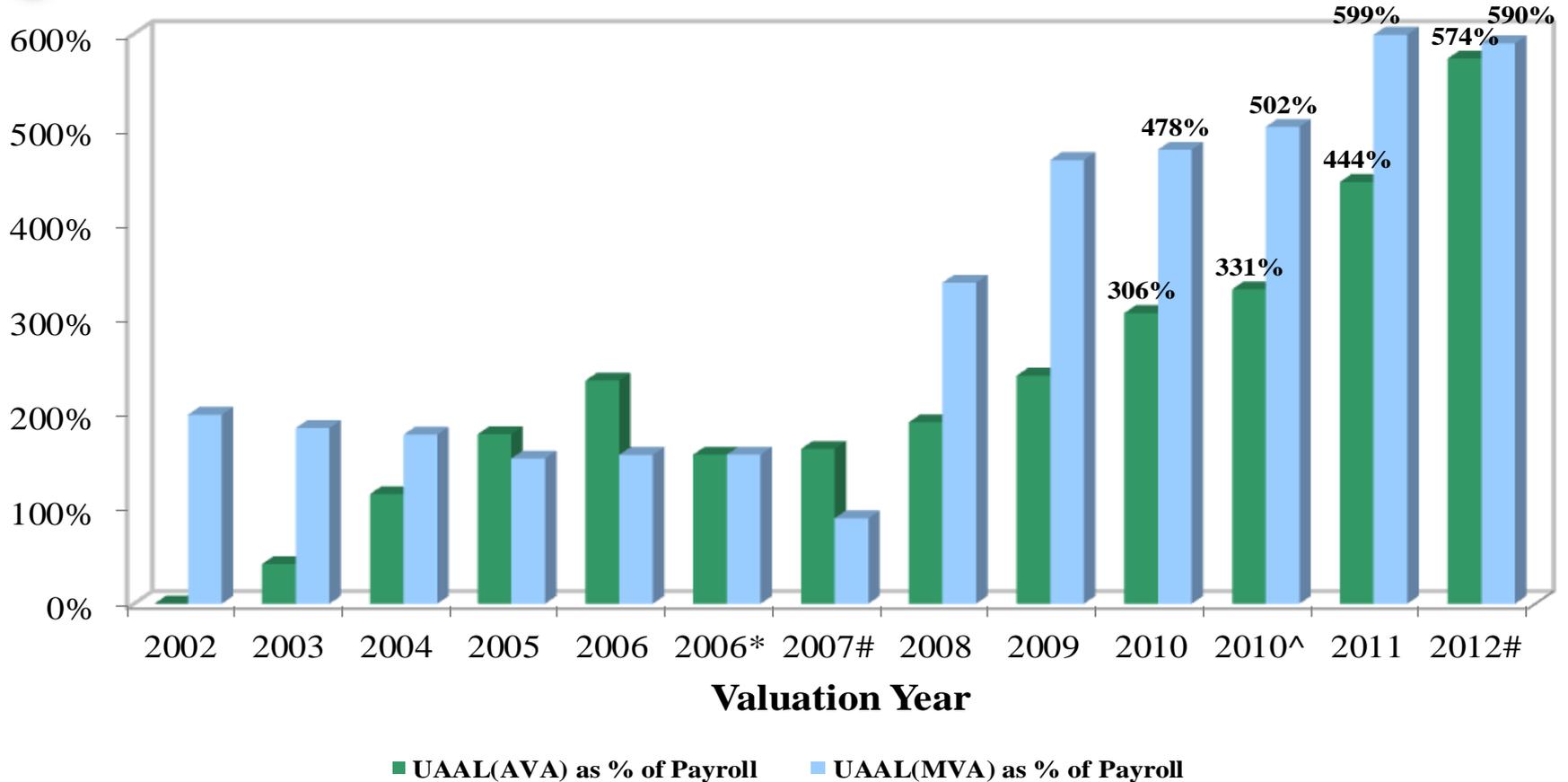


# Retirement System Funded % Based on Actuarial Value and Market Value of Assets



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

# Unfunded as Percentage of Payroll



\* After adjusting to market value.

# Revised benefit provisions.

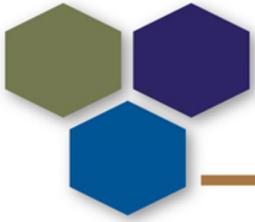
^ Revised actuarial assumptions



# 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.
- ◆ 9/30/12 smoothed value of assets was higher than market value.
  - ▶ Meeting the actuarial assumption will require average future market returns over 8% (Non-Hybrid assets).
- ◆ 9/30/12 valuation results based on market value:
  - ▶ Funded percent would be 63.0% (instead of 64.0%).
  - ▶ Employer contribution would be 54.16% (instead of 53.11%).



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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.