Bay County Employees' Retirement System

December 31, 2015 Actuarial Valuation

Board of Trustees Meeting

October 11, 2016

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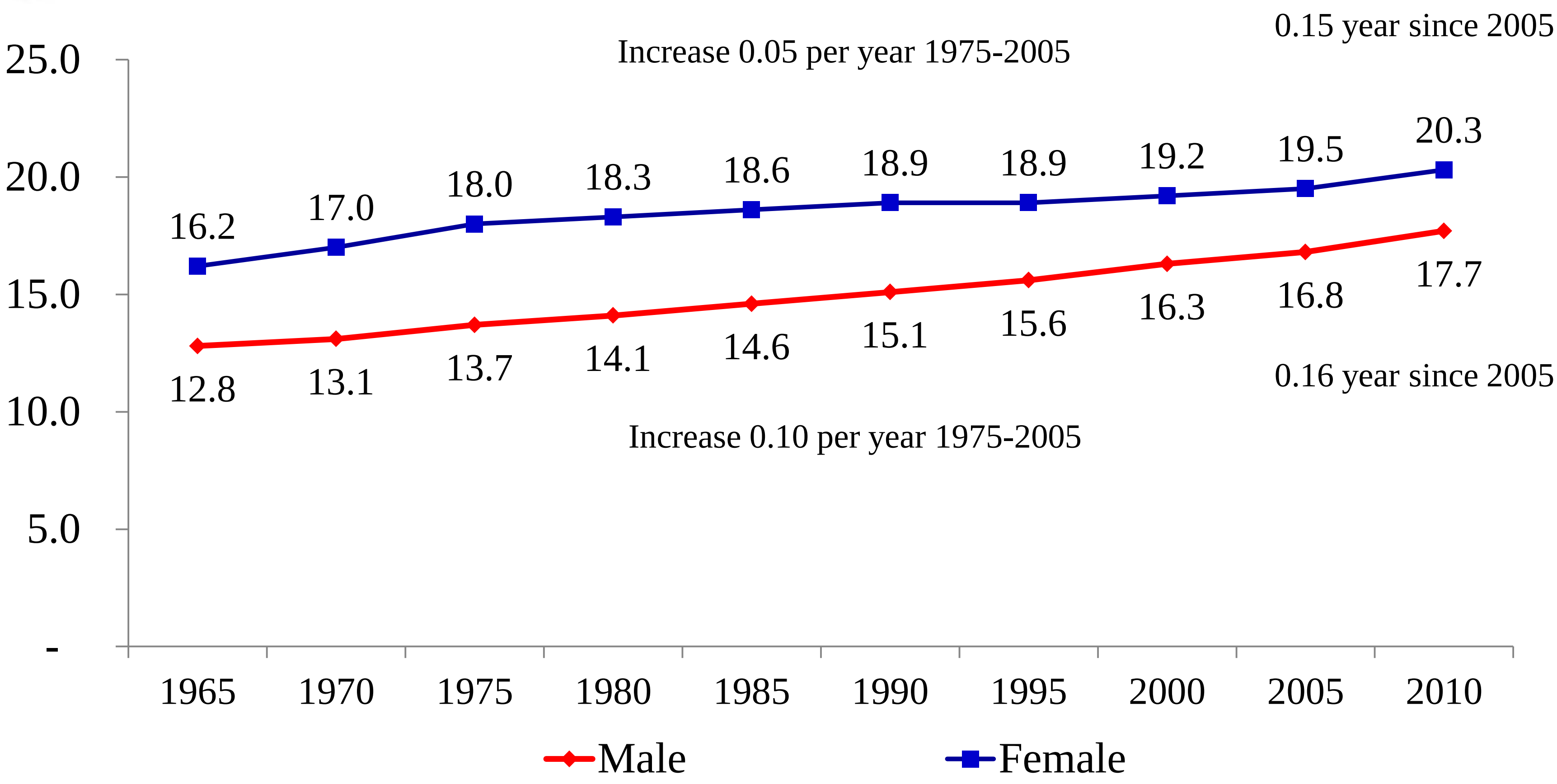
Agenda

- 2016 Headlines
- Actuarial Valuation Process
- Highlights of 2015 Bay County Actuarial Valuations
- Asset Performance
- Historical Contributions/Funded Ratios
- Looking Ahead

2016 Headlines

- Evolving Assumptions
  - Mortality
  - Investment return assumptions
- Financial Economics and Pensions

Life Expectancy for the General US Population - from Age 65



Since 2010, life expectancies continue to increase. The latest published rates (2012) are 20.5 years for females and 17.9 years for males, both from age 65.

Source: National Vital Statistics Reports

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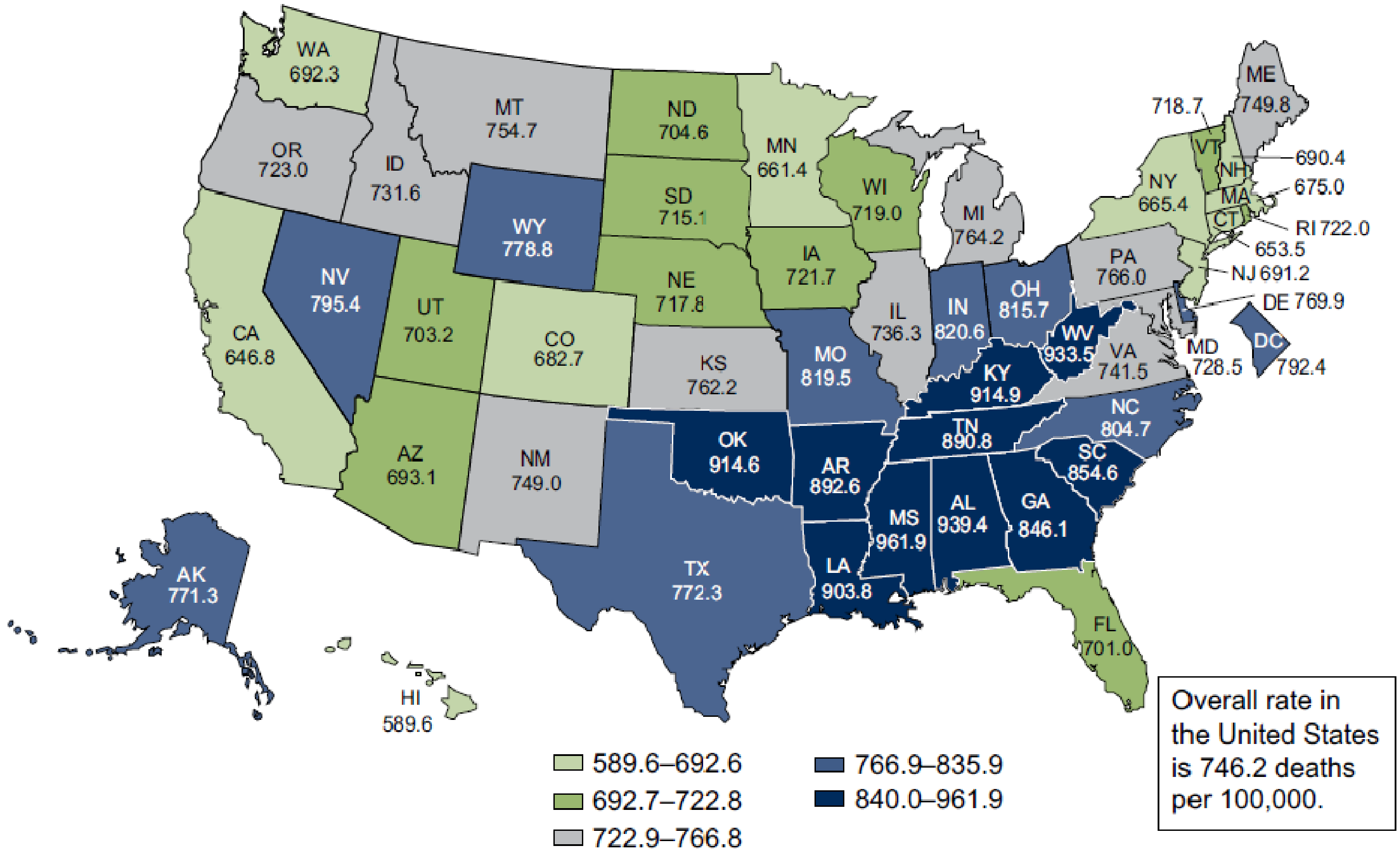
Mortality Rates by State



Source: National Vital Statistics

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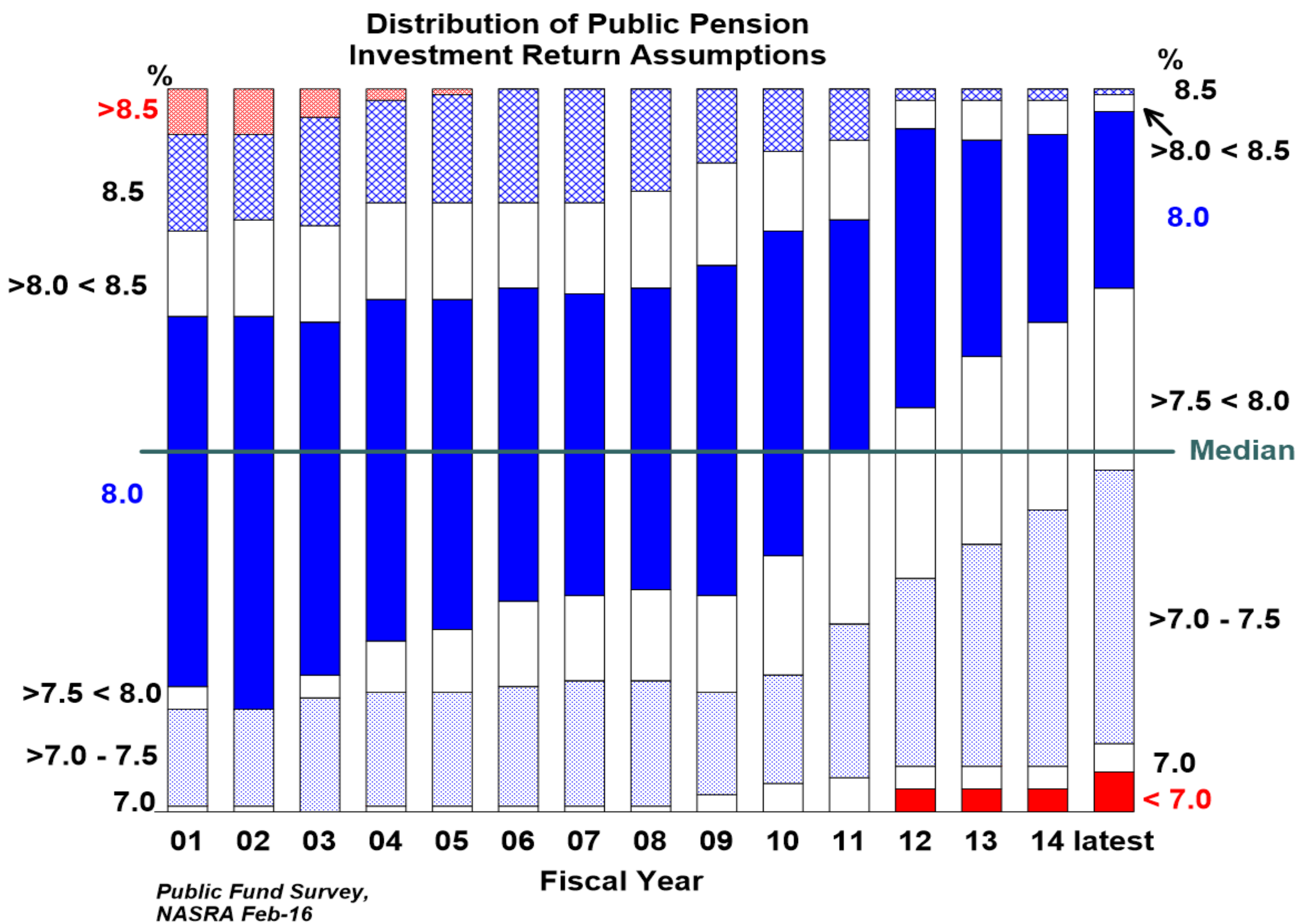
Developing Trends in Mortality Assumptions

- Society of Actuaries (SOA) issued the RP-2014 Mortality Tables in 2014
  - Issued mortality improvement assumption MP-2014 in conjunction with the new tables
- SOA issued an updated improvement assumption, MP-2015, in 2015 which reflects actual mortality experience through 2012
  - Slightly lower rate of improvement assumption
- SOA will issue another improvement assumption this month, MP-2016

National Trends -- Evolving Investment Return Assumptions



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Financial Economics and Pensions

- SOA and the American Academy of Actuaries (AAA) formed a joint Pension Finance Task Force in 2002
- Recently charged with publishing a paper on applying financial economics to Public Pension Plans
- In August, the organizations disbanded the Task Force
  - Report will not be jointly published
- Various versions of original report have been released, but only endorsed by five of the original authors
- SOA is planning a Pension Forum publication, which will include debate from a range of perspectives on the topic

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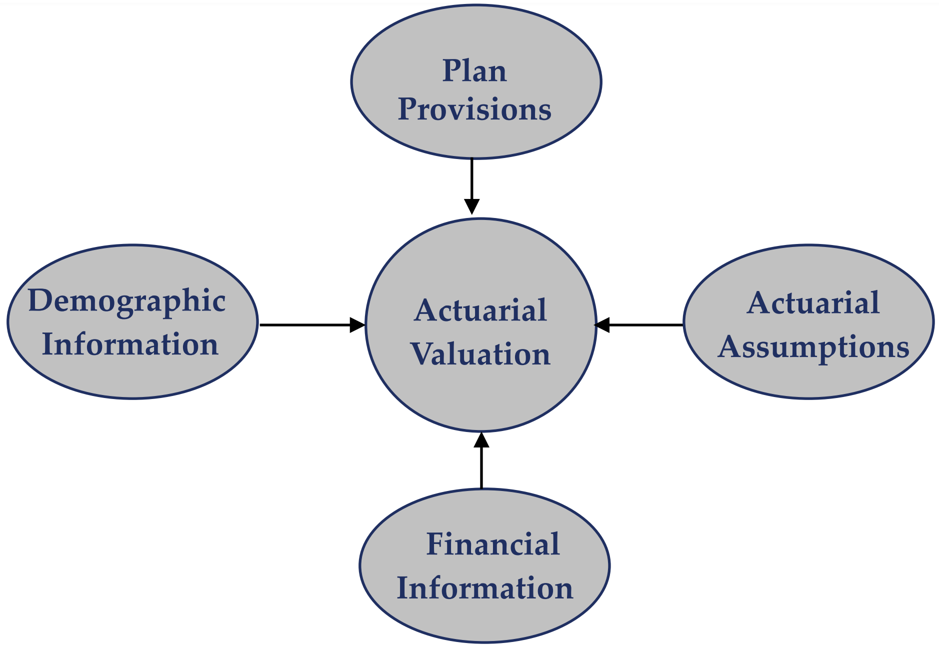
Financial Economics and Pensions

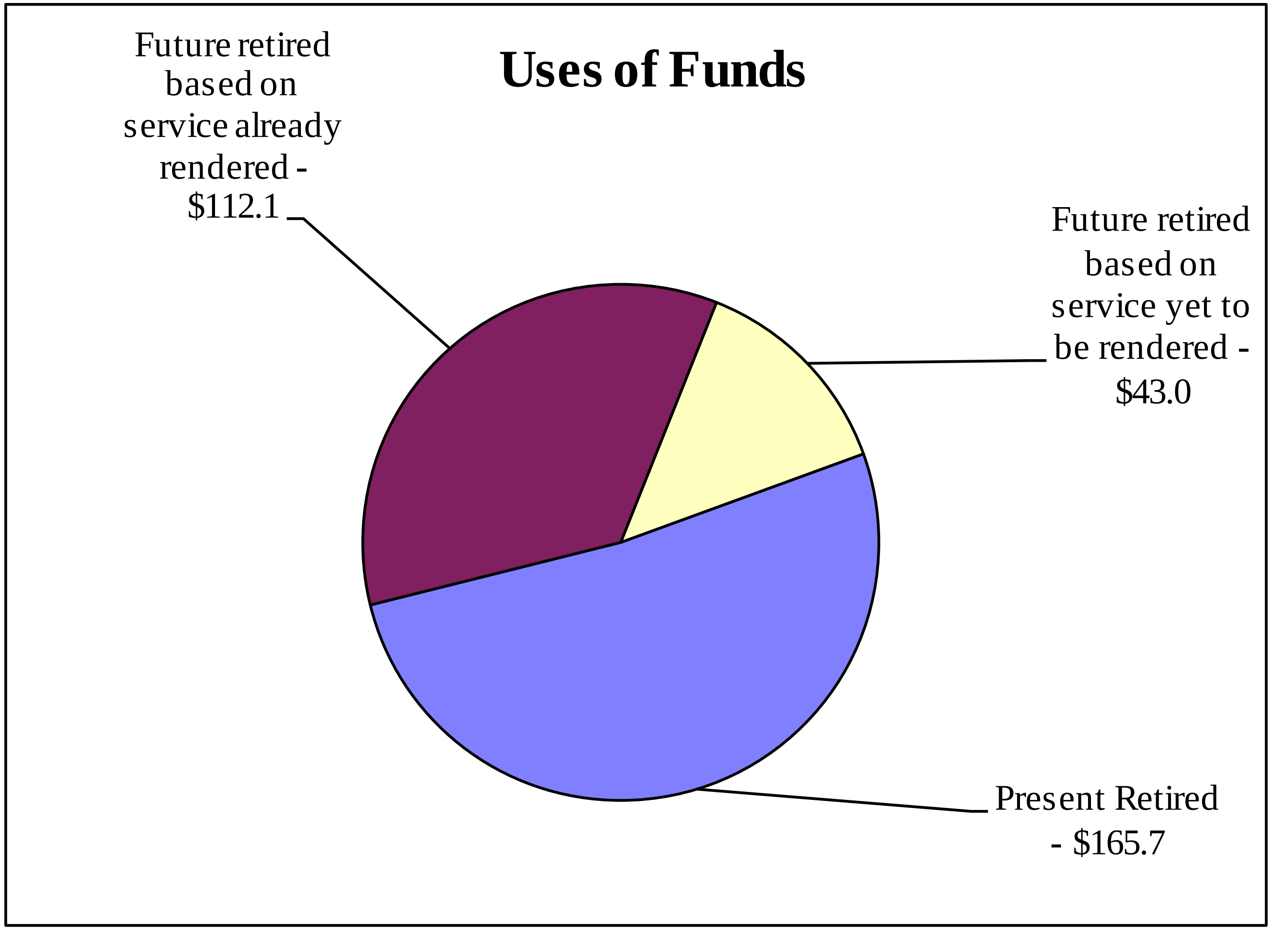
- Content of draft papers are very technical
- Basic premise of Financial Economics
  - Pension liability should be the present value of accrued benefits discounted at risk free rates
    - "Market value of liability"
  - Liability should be viewed as a debt of the plan sponsor
- Plans should fully fund the market value of liability every year
  - Under/over-funding at any time violates their definition of intergenerational (or interperiod) equity
- Plan investments should switch to risk-free bonds or other liability matching instruments.

Actuarial Valuation Process



- Demographic Information, Financial Information & Plan Provisions are provided by the plan sponsor.
- Actuarial assumptions are recommended by the actuary and approved by the Board.
- The actuarial valuation is a mathematical process used to project future payments on account of specified benefit provisions. These projected payouts are converted to equivalent present value amounts and a corresponding level percent-of-payroll contribution is determined.

$320.8 Million* of Benefit Promises to Present Active and Retired Members



* *Present value of future benefits; all divisions combined.*

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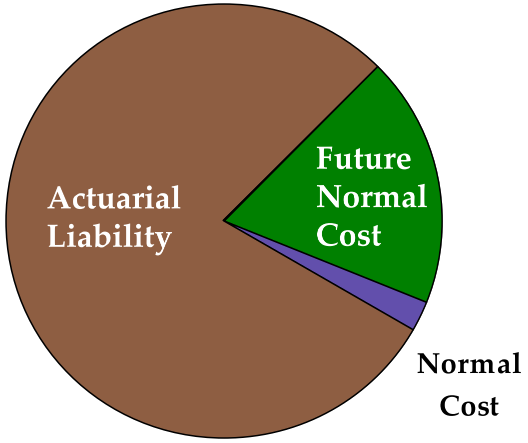
Actuarial Valuation Process

- Present Value of Future Benefits - Present Value (PV) of all future benefits payable to current participants (active, retired, terminated vested).
- Actuarial Liability - Portion of PV of Future Benefits allocated to prior years.
- Normal Cost - Portion of PV of Future Benefits allocated to current year.
- Future Normal Costs - Portion of PV of Future Benefits allocated to future years.

Present Value of Future Benefits



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Actuarial Valuation Process

Actuarial Accrued Liability
- Actuarial Value of Assets

Unfunded Actuarial Liability

Annual Contribution Requirement = Normal Cost + Amortization of the Unfunded Liability

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Highlights of 2015 BCERS Actuarial Valuations

- Two separate valuations as of December 31, 2015
  - 1. Stand alone valuation for Bay-Arenac Behavioral Health Authority (BABH)
    - Reflecting 2015 County-provided legal opinion that BCERS is an Agent-Multiple Employer plan
    - Segregated assets available for BABH benefits only
  - 2. Valuation for all other groups
- Valuation asset development consistent with prior valuations

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Highlights of 2015 BCERS Actuarial Valuations

	General	DWS	Library	Medical Care Facility	Sheriff's Department	Road Commission	Total	BABH
Participants								
Active	359	51	34	345	77	56	922	220
Retired	340	33	42	221	71	101	808	120
Terminated Vested	32	1	7	12	4	1	57	29
Total	731	85	83	578	152	158	1,787	369
Payroll	$ 15,136,977	$ 2,913,457	$ 1,557,990	$ 10,004,714	$ 4,117,072	$ 2,928,252	$ 36,658,462	$ 10,331,351
Actuarial Accrued Liability	94,104,820	15,098,195	10,861,167	47,949,010	29,125,325	32,004,096	229,142,613	48,624,039
Actuarial Value of Assets	108,740,536	12,349,491	11,349,968	53,512,212	35,812,264	27,399,419	249,163,890	46,894,673
Unfunded Actuarial Accrued Liability	(14,635,716)	2,748,704	(488,801)	(5,563,202)	(6,686,939)	4,604,677	(20,021,277)	1,729,366
Funded Ratio	116%	82%	105%	112%	123%	86%	109%	96%
Contribution Requirement								
Employer Normal Cost	6.33 %	7.53 %	$ 117,940	6.63 %	10.05 %	10.17 %		7.47 %
Amortization Payment for ERIP^								1.28
Amortization Payment	(11.08)	5.30	(60,932)	(6.36)	(18.69)	9.02		0.20
Total	0.00 %	12.83 %	$ 57,008	0.27 %	0.00 %	19.19 %	$ 1,088,320	8.95 %

^ *Amortization payment associated with the Early Retirement Incentive Program (ERIP).*

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Highlights of 2015 BCERS Actuarial Valuation

		Contribution Rate	
	Valuation Year	**12/31/2014**	**12/31/2015**
Division	**Fiscal Year**	**1/1/2016**	**1/1/2017**
General County		0.00 %	0.00 %
DWS		14.16	12.83
Library		$ 34,265	$ 57,008
Medical Care Facility		2.87 %	0.27 %
Sheriff's Department		0.00	0.00
Road Commission		18.09	19.19
BABH		11.36 %	8.95 %

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Highlights of 2015 BCERS Actuarial Valuations

- No changes to valuation assumptions or methods for the 2015 valuation.
- The Sheriff's Department first reported, for this valuation, a correction to the benefit multiplier for Road Patrol Supervisory Unit members hired before 1/1/2012.

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Highlights of 2015 BCERS Actuarial Valuations

- The aggregate experience during 2015 was favorable, with overall gains.

Source	County Employers Other Than BABH	BABH
Investment G/(L)* Sources	$2,202,020	$404,034
Non-Investment G/(L) (Demographic) Sources	2,923,376	35,508
Total	$5,125,396	$439,542

** Based on the smoothed asset method.*

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Highlights of 2015 BCERS Actuarial Valuations: Demographic G/(L)

- Overall experience was favorable due to actual retiree death and termination experience relative to expectations
- However, Library and Road Commission had more than offsetting losses:
  - Losses on pay (Actual > Expected) for both groups
  - Additional Library loss on new retirements due to larger than expected service credits at retirement

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Highlights of 2015 BCERS Actuarial Valuations

- We developed the value of anticipated future benefit payments to retired members and their beneficiaries. We then compared this accrued liability to the reported value of the retirement reserve account. The figures below compare the retired liabilities and the reserves for each division.

Division	Accrued Liability	Reported Retiree Reserve	Unfunded Retiree Liability
General	$ 53,273,471	$ 51,973,294	$ 1,300,177
DWS	9,606,595	9,172,562	434,033
Library	6,365,927	5,923,767	442,160
Medical Care Facility	28,699,569	26,777,096	1,922,473
Sheriff's Department	15,108,455	14,850,209	258,246
Road Commission	23,287,573	19,839,730	3,447,843
Total	**$ 136,341,590**	**$ 128,536,658**	**$ 7,804,932**

Division	Accrued Liability	Reported Retiree Reserve	Unfunded Retiree Liability
BABH	$ 29,345,292	$ 28,487,352	$ 857,940

- As of the valuation date, there is a shortfall in the retiree reserve for all groups.
- The valuation anticipates that the difference between the accrued liability and the reported reserve will be transferred from the Retirement System employer reserve to the retiree reserve effective January 1, 2016 to fully fund the retiree accrued liability.

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Highlights of 2015 BCERS Actuarial Valuations

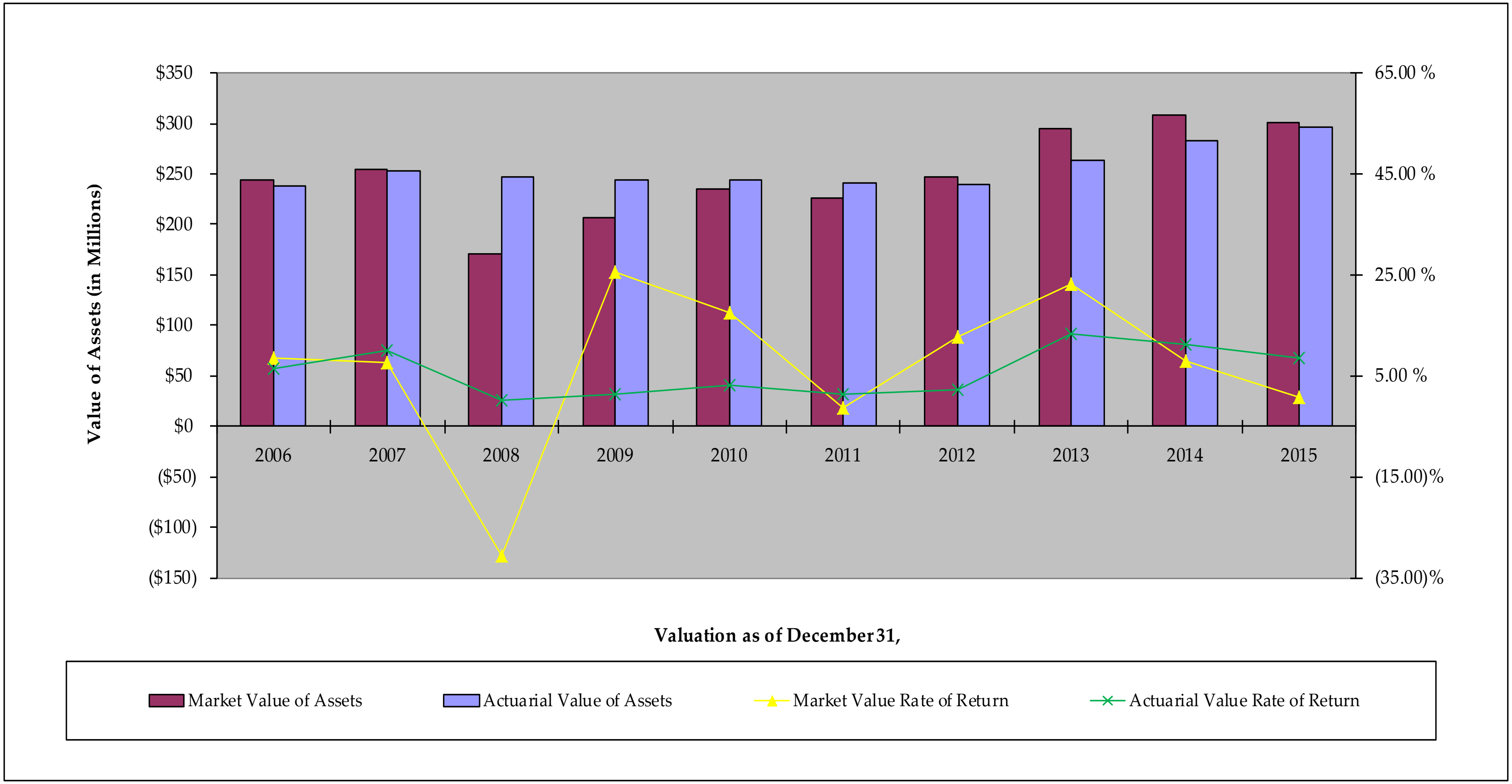
- Contribution rates should trend toward the long-term cost or normal cost of the benefits over time.
  - Experience gains/losses will always serve to deviate contributions from pure normal cost
- All divisions have required employer contributions, except the General County and Sheriff's department.

BCERS - Asset Performance

	December 31,									
	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Market Value of Assets*	$243.6	$254.2	$170.2	$206.0	$235.4	$225.7	$246.9	$295.4	$308.1	$300.9
Rate of Return	8.37 %	7.52 %	(30.62)%	25.46 %	17.63 %	(1.22)%	12.65 %	23.03 %	7.98 %	0.77 %
Actuarial Value of Assets*	237.7	253.5	246.6	243.3	244.7	241.2	239.3	263.4	282.2	296.1
Rate of Return	6.32 %	9.92 %	0.17 %	1.38 %	3.26 %	1.37 %	2.11 %	13.42 %	11.32 %	8.44 %

* *Assets in millions of dollars.*

BCERS - Asset Performance



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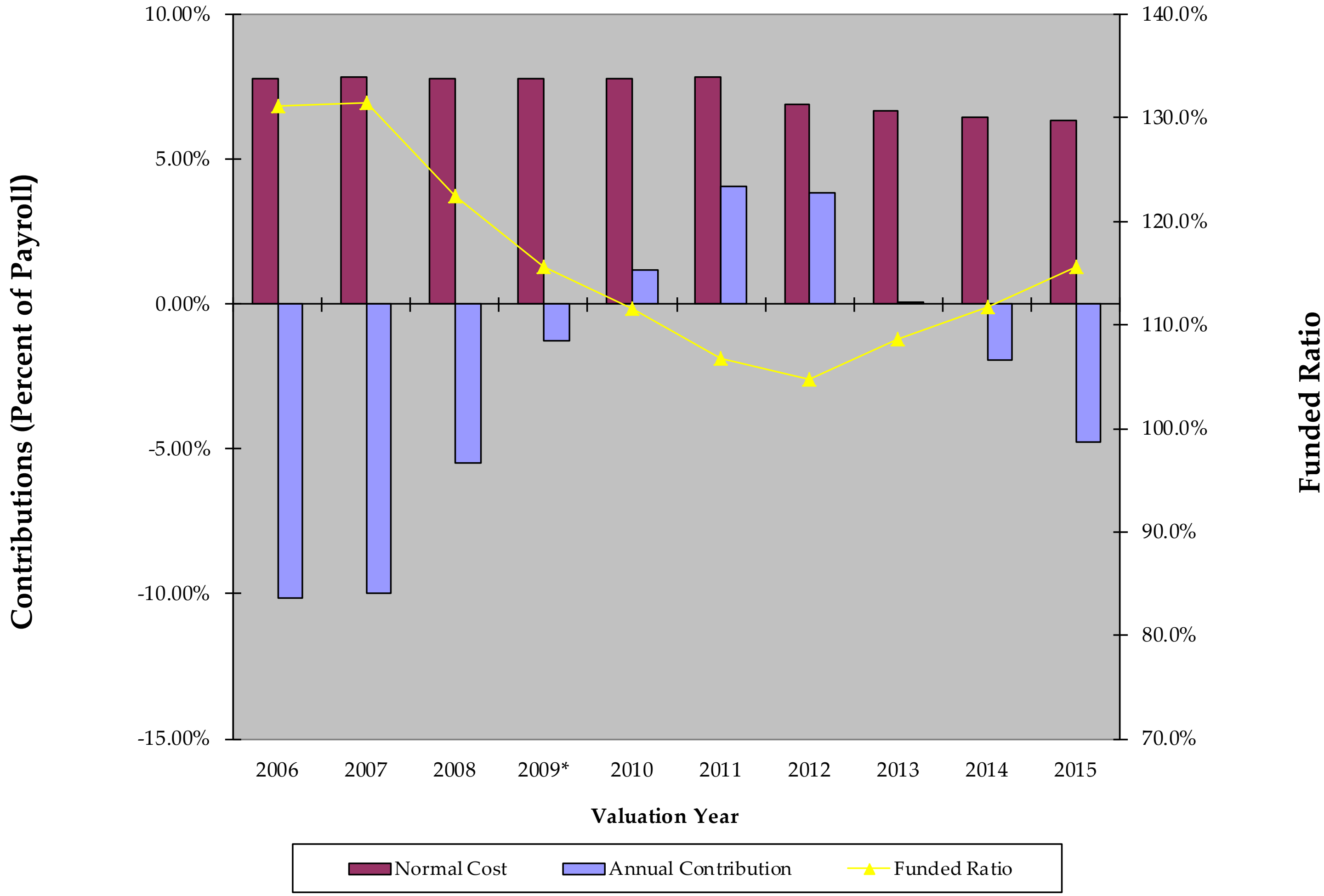
Historical Information – General



** 2009 valuation implemented a 1-year lag – results used for FY 2010 and FY 2011.*

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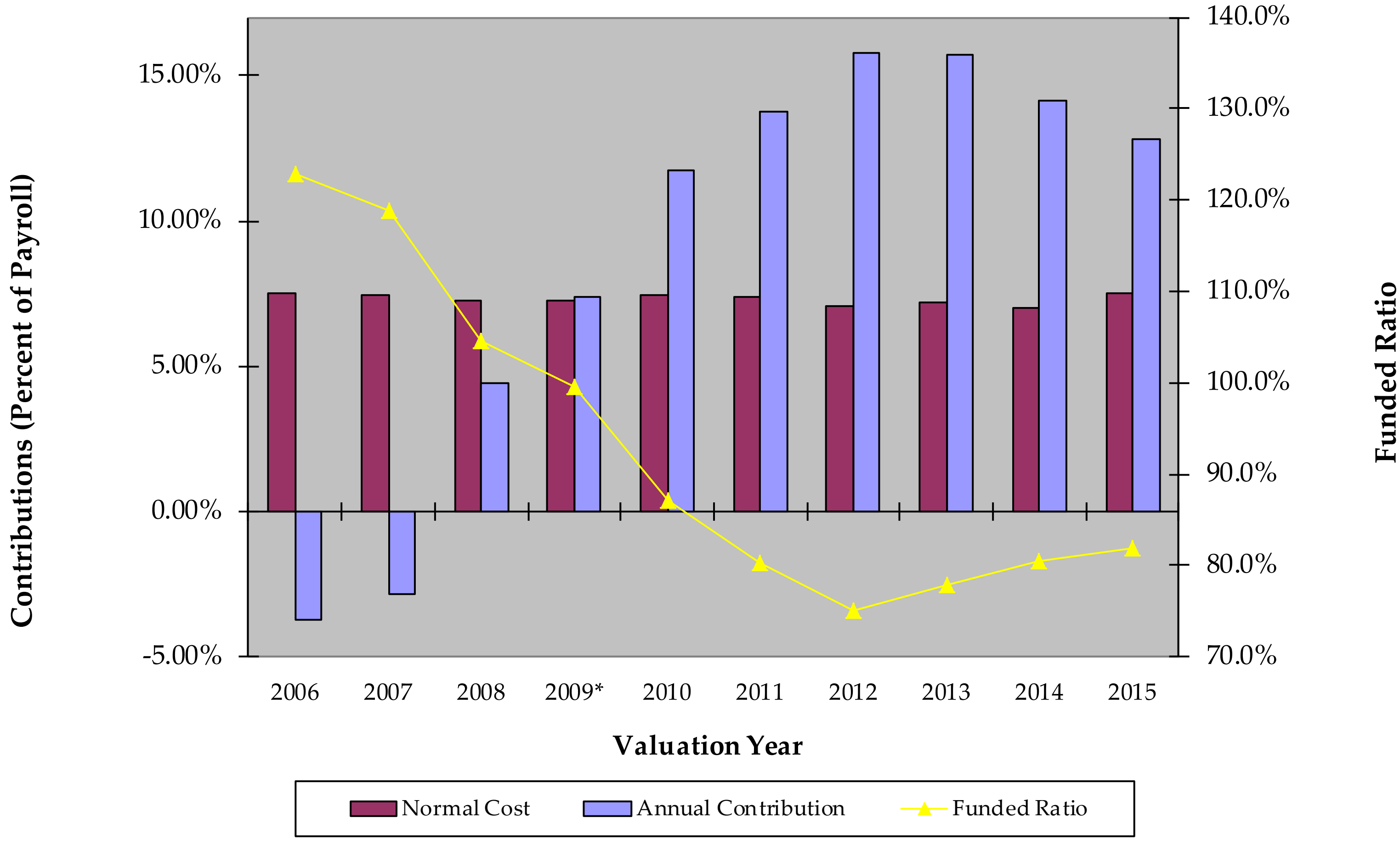
Historical Information – DWS



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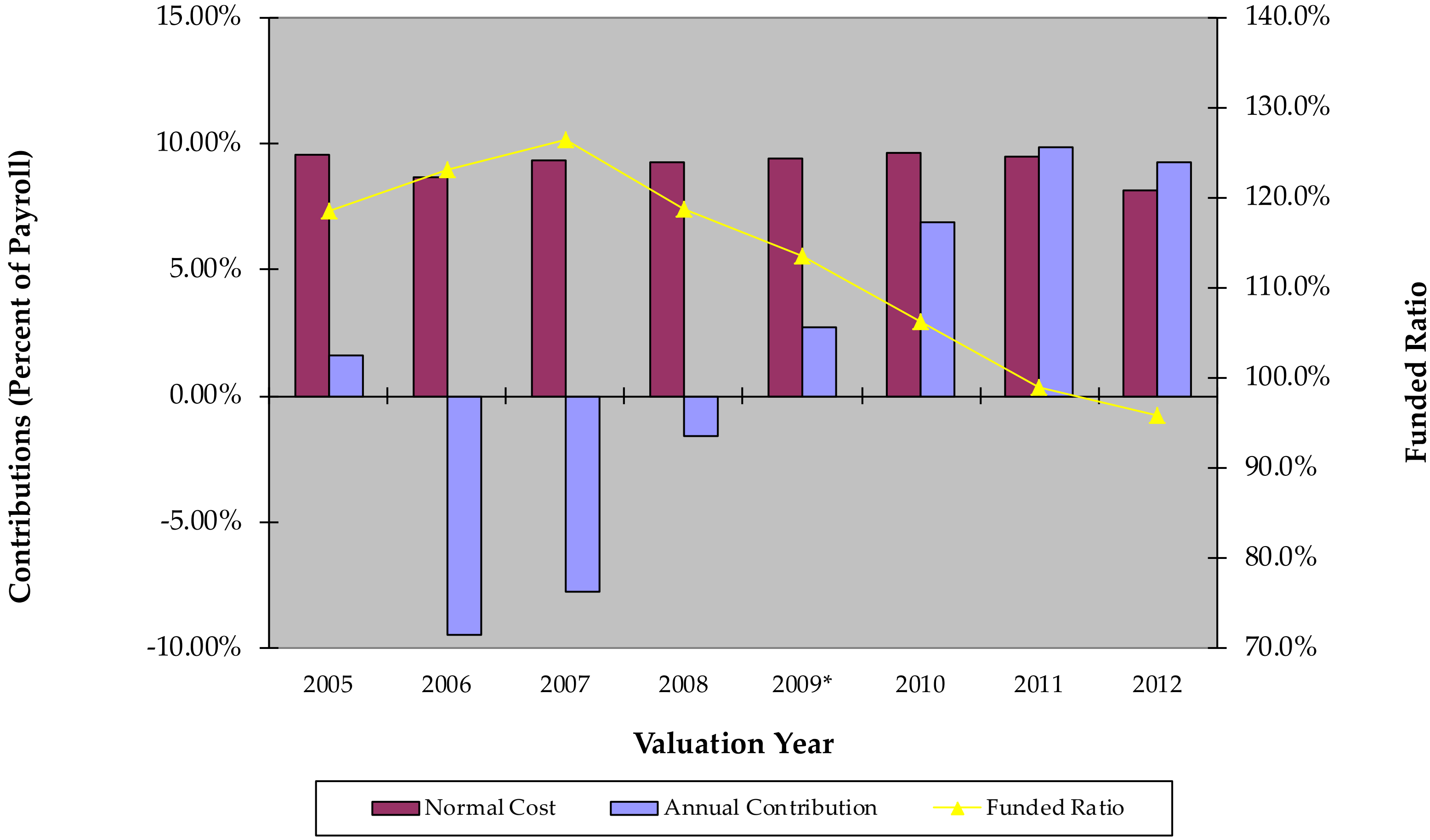
Historical Information – Library



** 2009 valuation implemented a 1-year lag – results used for FY 2010 and FY 2011.*

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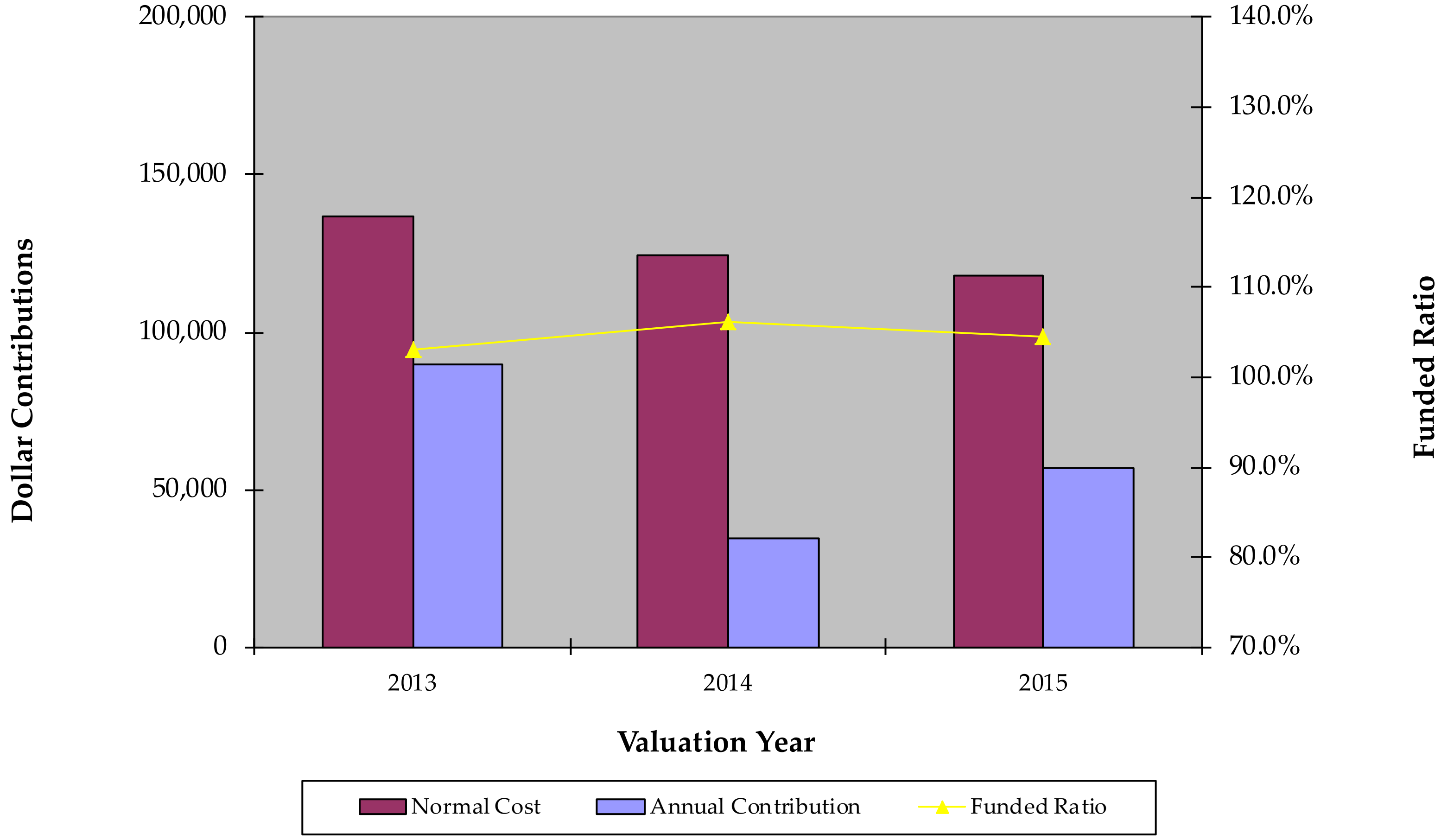
Historical Information – Library (Concluded)



2013 valuation reflects closure of plan to new hires – contribution expressed as level dollar amount.

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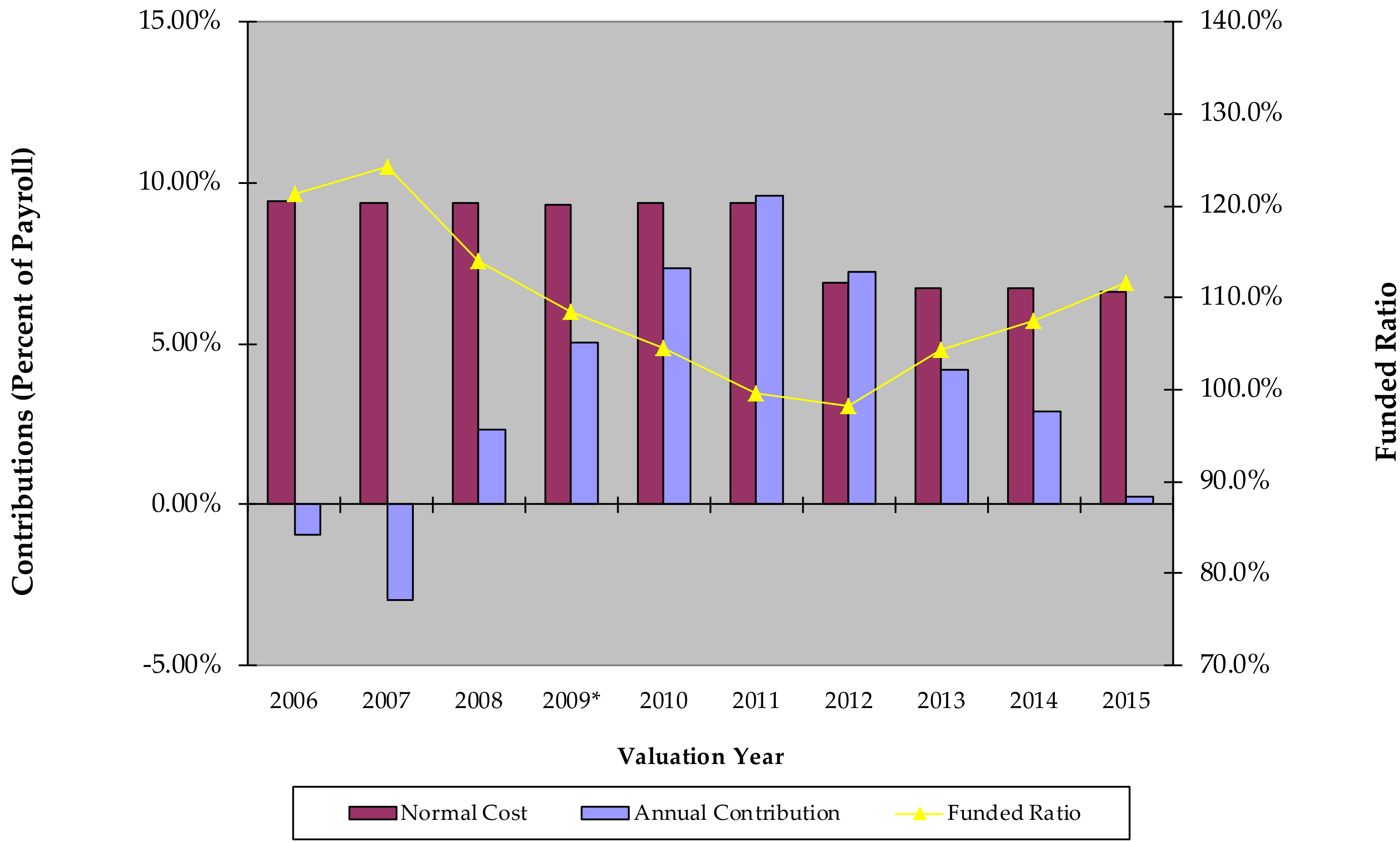
Historical Information – Medical Care Facility



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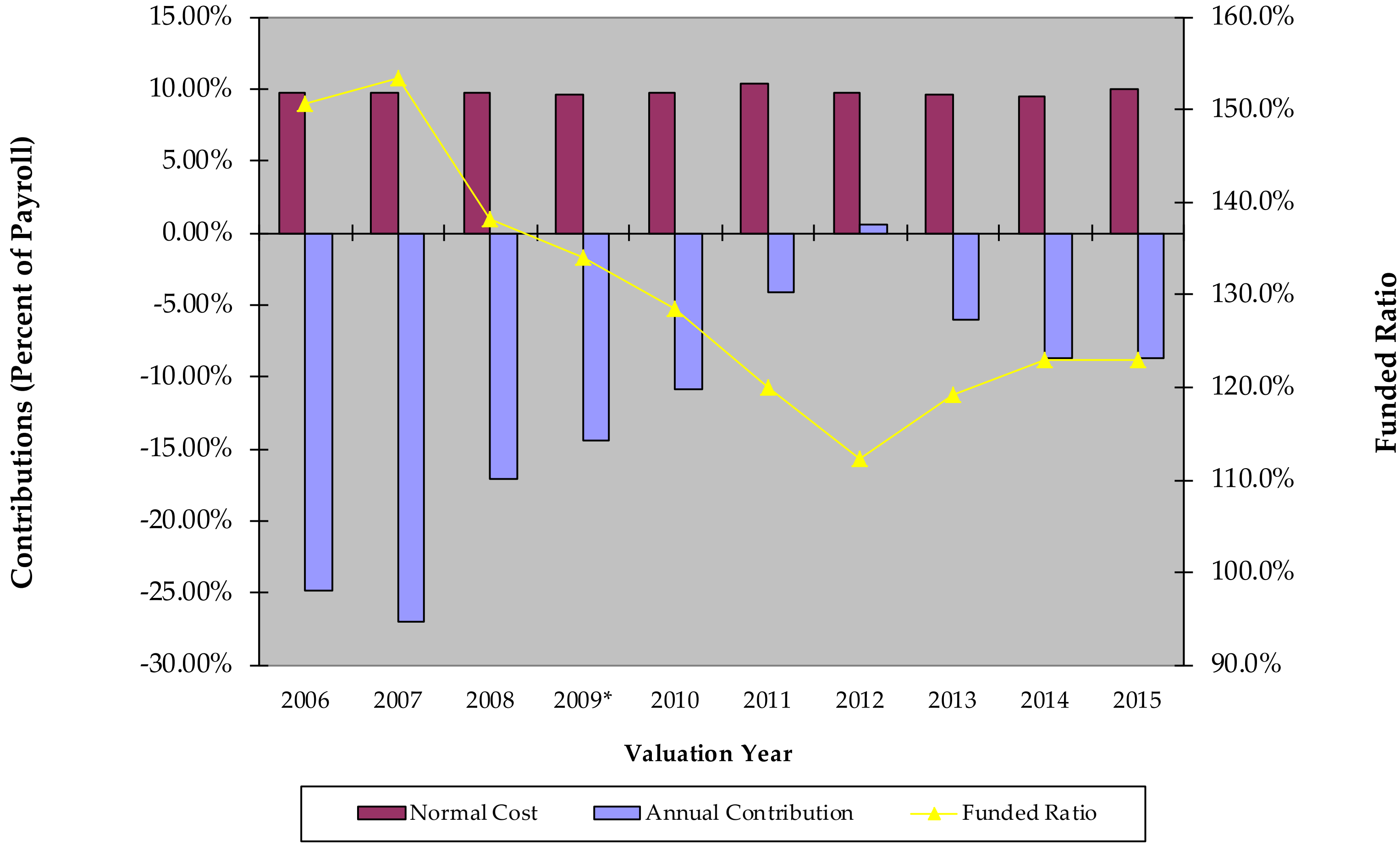
Historical Information – Sheriff's Department



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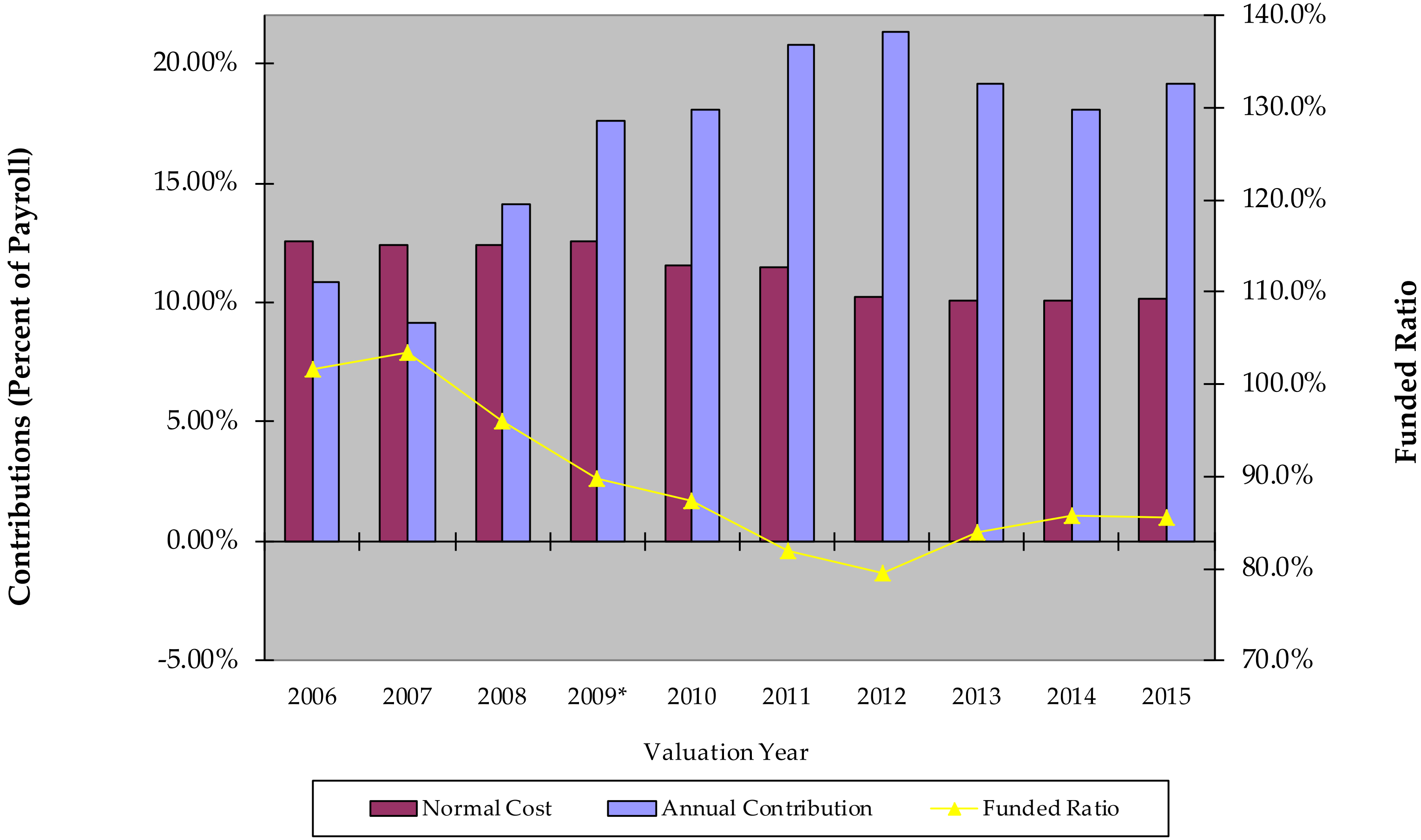
Historical Information – Road Commission



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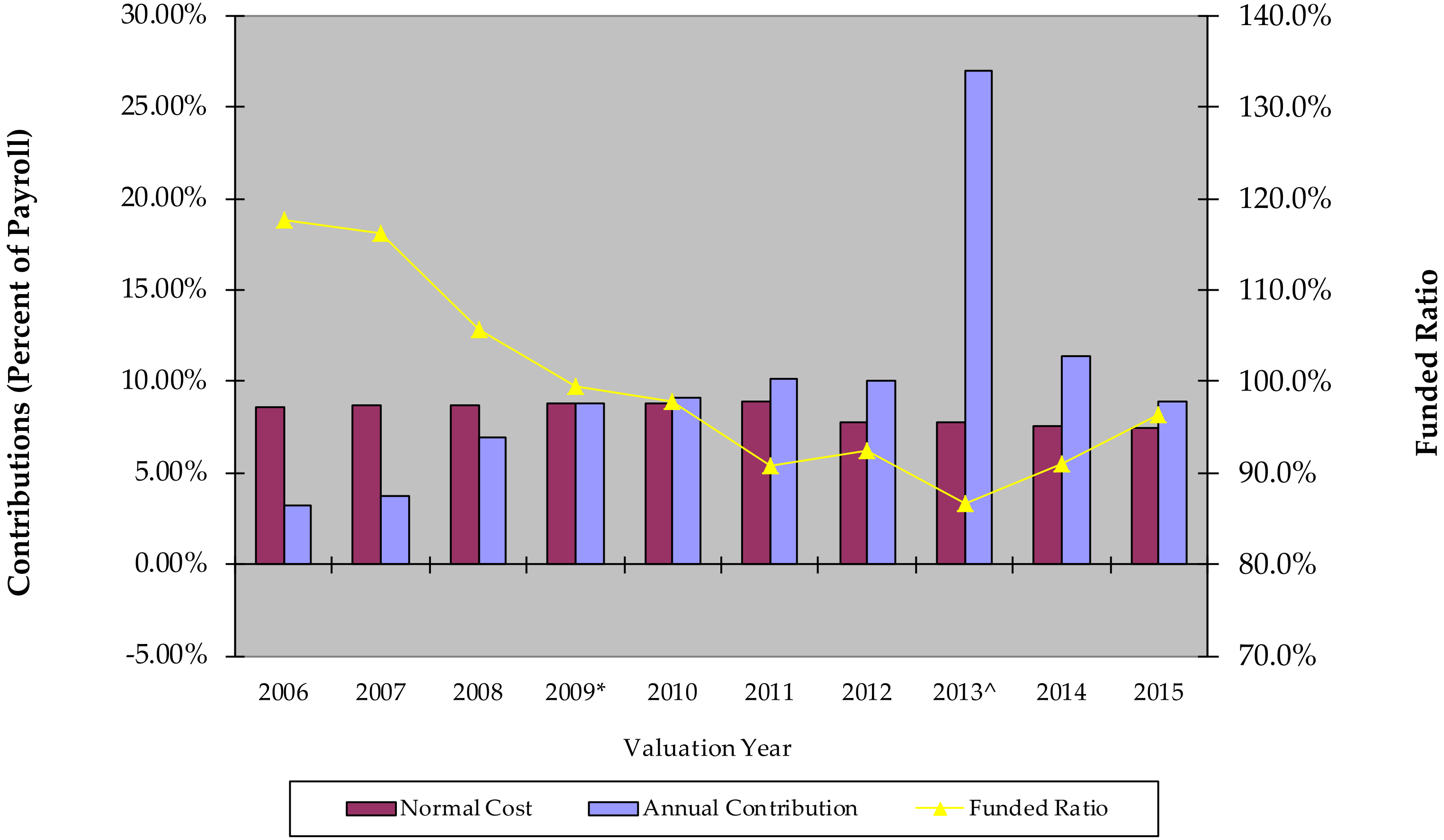
Historical Information – BABH



** 2009 valuation implemented a 1-year lag – results used for FY 2010 and FY 2011.*
^ 2013 valuation reflected an advanced payment of the unfunded ERIP liability.

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Looking Ahead - Contributions

- Asset smoothing helps reduce the volatility of the employer contributions.
  - The impact of a near-zero 2015 market return was muted by favorable investment performance in recent years.
  - The funding value of assets was 98% of market value.
  - Remaining phase-in of past market gains of $6.8 & $4.7 million for 2016 & 2017 valuations respectively, followed by phase-in of deferred losses of $3.0 & $3.7 million thereafter.
- The Retirement System will continue to mature.
  - More retirees than active employees.
  - Normal for a prefunded retirement system.

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Disclaimers

- This presentation is one of many documents comprising the December 31, 2015 actuarial valuations of the Bay County Employees' Retirement System. This presentation should not be relied on for any purpose other than the purpose described in the valuation report.

- Future actuarial measurements may differ significantly from the current measurements presented in this report 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; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law.

Disclaimers

- This presentation shall not be construed to provide tax advice, legal advice or investment advice.

- James D. Anderson and Shana M. Neeson are independent of the plan sponsor, are Members of the American Academy of Actuaries (MAAA), and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.