

# Wilshire Consulting

## **2010 Report on City & County Retirement Systems: Funding Levels and Asset Allocation**

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# *Table of Contents*

<i>Section</i>	<i>Page</i>
Summary of Findings.....	1
Financial Overview.....	2
<i>The Data</i> .....	2
<i>Assets versus Liabilities</i> .....	2
<i>Funding Ratios</i> .....	5
<i>Unfunded Actuarial Accrued Liability</i> .....	8
<i>Market Value of Assets versus Actuarial Value of Assets</i> .....	10
Asset Allocation.....	12
Appendix A: City and County Retirement Systems .....	16



## **Summary of Findings**

- The following study includes 104 city and county retirement systems. Of these 104 retirement systems, 77 systems reported actuarial values on or after June 30, 2008 and the remaining 27 systems last reported before June 30, 2008.
- Wilshire Consulting estimates that the ratio of pension assets-to-liabilities, or *funding ratio*, for all 104 city and county pension plans was 74 percent in 2009, significantly lower than the estimated 88 percent for all plans in 2008. (Exhibit 1)
- For the 77 city and county retirement systems which reported actuarial data on or after June 30, 2009, pension assets and liabilities were \$302.1 billion and \$417.5 billion, respectively. The ratio of pension assets-to-liabilities, or *funding ratio*, for all 77 city and county pension plans was 72 percent in 2009, down from 86 percent for the same 77 plans in 2008. (Exhibit 2)
- For the 77 city and county retirement systems which reported actuarial data on or after June 30, 2009, pension assets fell by -1.2 percent, or -\$3.6 billion, from \$305.7 billion in 2008 to \$302.1 billion in 2009 while liabilities grew 17.4 percent, or \$62.0 billion, from \$355.5 billion to \$417.5 billion. The slight decline in asset values combined with the continued steady growth in liabilities for the 77 city and county pension plans led to a significant increase in the aggregate shortfall, as the -\$49.8 billion shortfall in 2008 expanded to a -\$115.4 billion shortfall in 2009. (Exhibit 2)
- Of the 77 city and county retirement systems which reported actuarial data for 2009, 99 percent have market value of assets less than pension liabilities, or are *underfunded*. The aggregate ratio of pension assets-to-liabilities, or *funding ratio*, for all underfunded plans is 72%.
- City and county pension portfolios have a 61.3 percent average allocation to equities – including real estate and private equity – and a 38.7 percent allocation to fixed income. The 61.3 percent equity allocation is somewhat lower than the 65.4 percent equity allocation five years prior in 2004. (Exhibits 12 and 13)
- Asset allocation varies widely by city and county retirement system. Twenty-three of the 104 retirement systems have allocations to equity that equal or exceed 70 percent, and fifteen systems have equity allocations below 50 percent. The 25<sup>th</sup> and 75<sup>th</sup> percentile range for equity allocation is 56 percent to 68 percent.
- Wilshire forecasts a long-term median return on city and county pension assets equal to 6.5 percent per annum. This 6.5 percent estimate is 1.5 percentage points below the median actuarial interest rate assumption of 8.0 percent.



## **Financial Overview**

This is our eighth report on the financial condition of city- and county-sponsored defined benefit retirement systems and is based upon data gathered from the most recent financial and actuarial reports published by 104 retirement systems. Appendix A lists the 104 retirement systems included in this year's study.

### *The Data*

Financial data on public retirement systems lack the timeliness and uniform disclosure governing pension plans sponsored by publicly traded companies, making it difficult to conduct a study with data that are both current and consistent across systems. For this reason, our study methodology involves collecting data during the third quarter of each calendar year with the objective of acquiring as many reports as possible with a June 30 valuation date from the previous year. Even for systems with the desire to report in a timely manner, it often takes six months to one year for actuaries to determine liability values. Seventy-seven of the 104 systems, for which data are collected annually, reported actuarial values on or after June 30, 2009.

### *Assets versus Liabilities*

Exhibit 1 shows the market value of assets, actuarial value of assets, and actuarial accrued liability values for all city and county retirement systems for which Wilshire has data. One hundred four retirement systems reported actuarial values for fiscal years 2001 through 2007, with 103 and 77 of the 104 systems reporting values for fiscal years 2008 and 2009, respectively. With the exception of the two rows identifying Wilshire's estimated funded ratios, the data presented in each column of Exhibit 1 are limited to only those systems that reported on or after June of that year. For example, all 104 retirement systems reported actuarial values for 2005 while only 77 systems reported actuarial values for 2009. Note that Exhibit 1 includes both market value and actuarial value of assets. Unless otherwise noted, "assets" will refer to market value of assets for the remainder of this paper.



### Exhibit 1 Financial Overview of City & County Retirement Systems<sup>1</sup> (\$ billions)

	2001	2002	2003	2004	2005	2006	2007	2008	2009
<b>Total Pension Assets:</b>									
- Market Value	\$291.3	\$262.5	\$273.2	\$306.6	\$330.5	\$359.1	\$411.5	\$358.3	\$302.1
- Actuarial Value	\$305.1	\$308.4	\$307.9	\$313.5	\$326.9	\$342.7	\$366.8	\$377.4	\$373.8
<b>Total Pension Liabilities:</b>	\$305.6	\$324.5	\$339.5	\$353.8	\$373.2	\$388.0	\$407.8	\$424.5	\$417.5
<b>Difference:</b>									
- Market Value	-\$14.3	-\$62.1	-\$66.2	-\$47.3	-\$42.7	-\$28.9	\$3.7	-\$66.2	-\$115.4
- Actuarial Value	-\$0.6	-\$16.1	-\$31.5	-\$40.3	-\$46.4	-\$45.3	-\$41.0	-\$47.1	-\$43.7
<b>Market Value of Assets as a % of Liabilities:</b>									
All Plans (estimate)*	95%	81%	80%	87%	89%	93%	101%	<b>88%</b>	<b>74%</b>
Reported Plans (actual)	95%	81%	80%	87%	89%	93%	101%	84%	72%
<b>Actuarial Value of Assets as a % of Liabilities</b>									
All Plans (estimate)*	100%	95%	91%	89%	88%	88%	90%	<b>92%</b>	<b>93%</b>
Reported Plans (actual)	100%	95%	91%	89%	88%	88%	90%	89%	90%
<b>Total No. of Retirement Systems:</b>	104	104	104	104	104	104	104	103	77

Although the total pension asset and liability values for 2009 in Exhibit 1 are not directly comparable to earlier years because of the smaller number of retirement systems included (77 vs. 103-104), the funding ratios, or ratio of assets-to-liabilities, provide a measure of the financial health for these retirement systems during the last eight years. Market value funding ratios fell dramatically between 2001 and 2002, from 95 percent to 81 percent, stabilized between 2002 and 2003, and rebounded swiftly to 103 percent from 2004 to 2007. The effects of the global market dislocation events of 2007 and 2008 are readily observed in the fall in market value funding ratio between 2007 and 2008, from 103% to 88%. In this latest year of data, the market value funding ratio declined by -14 percent, the second-largest decrease in the eight years of this study. Our 2009 actuarial funded ratio estimate for all plans is 93%, a 1 percent increase from our 2008 estimate.

Exhibit 2 shows asset and liability values for the 77 retirement systems which reported actuarial values for 2009 and compares them with the same totals from the previous seven years.

<sup>1</sup> As disclosed in the comprehensive annual financial reports (most annual reports use a June 30 or December 31 fiscal year). Liabilities are the reported actuarial accrued liabilities and assets are the actuarial values as of the same valuation date as liabilities and the current market values as of the fiscal date of the report.



## Exhibit 2 Financial Overview of 77 City & County Retirement Systems (\$ billions)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	Annualized Growth %	
										2001-2009	2008-2009
<b>Total Pension Assets:</b>											
- Market Value	\$249.5	\$223.3	\$229.4	\$257.7	\$276.8	\$299.7	\$344.6	\$305.7	\$302.1	2%	-1%
- Actuarial Value	\$263.6	\$266.0	\$263.4	\$266.7	\$276.1	\$288.3	\$308.1	\$317.7	\$373.8	4%	21%
<b>Total Pension Liabilities:</b>	\$261.7	\$276.6	\$287.0	\$298.4	\$314.3	\$325.3	\$340.9	\$355.5	\$417.5	6%	22%
<b>Difference:</b>											
- Market Value	-\$12.2	-\$53.3	-\$57.7	-\$40.7	-\$37.5	-\$25.5	\$3.6	-\$49.8	-\$115.4		
- Actuarial Value	\$1.9	-\$10.6	-\$23.7	-\$31.8	-\$38.2	-\$36.9	-\$32.8	-\$37.8	-\$43.7		
<b>Assets as a % of Liabilities:</b>											
- Market Value	95%	81%	80%	86%	88%	92%	101%	86%	72%		
- Actuarial Value	101%	96%	92%	89%	88%	89%	90%	89%	90%		
<b>Underfunded Plans as % of All Plans:</b>											
- Market Value	64%	84%	82%	75%	70%	72%	57%	84%	99%		
- Actuarial Value	53%	66%	81%	78%	84%	84%	81%	83%	87%		
<b>Total No. of Systems:</b>	77	77	77	77	77	77	77	77	77		

In 2008, the pension liabilities of these 77 systems exceeded assets by \$49.8 billion and the funding ratio, or ratio of assets-to-liabilities, one measure of pension fund health, stood at 86 percent. One year later, assets have fallen by -1 percent, to \$302.1 billion, while liabilities have grown 22 percent, to \$417.5 billion. The result has been an increase in the shortfall between assets and liabilities from a -\$49.8 billion deficit to a -\$115.4 billion deficit, a -\$65.6 billion decline, and a decrease in the ratio of assets-to-liabilities from 86 percent to 72 percent.

In 2004, pension assets trailed liabilities by \$40.7 billion and the funding ratio, or ratio of assets-to-liabilities, stood at 86 percent. During the next five years, assets grew by 17 percent while liabilities grew 40 percent. The result has been an increase in the shortfall between assets and liabilities from -\$40.7 billion in 2004 to -\$115.4 billion in 2009, a \$74.7 billion difference, and a decrease in the ratio of assets-to-liabilities from 86 percent to 72 percent.

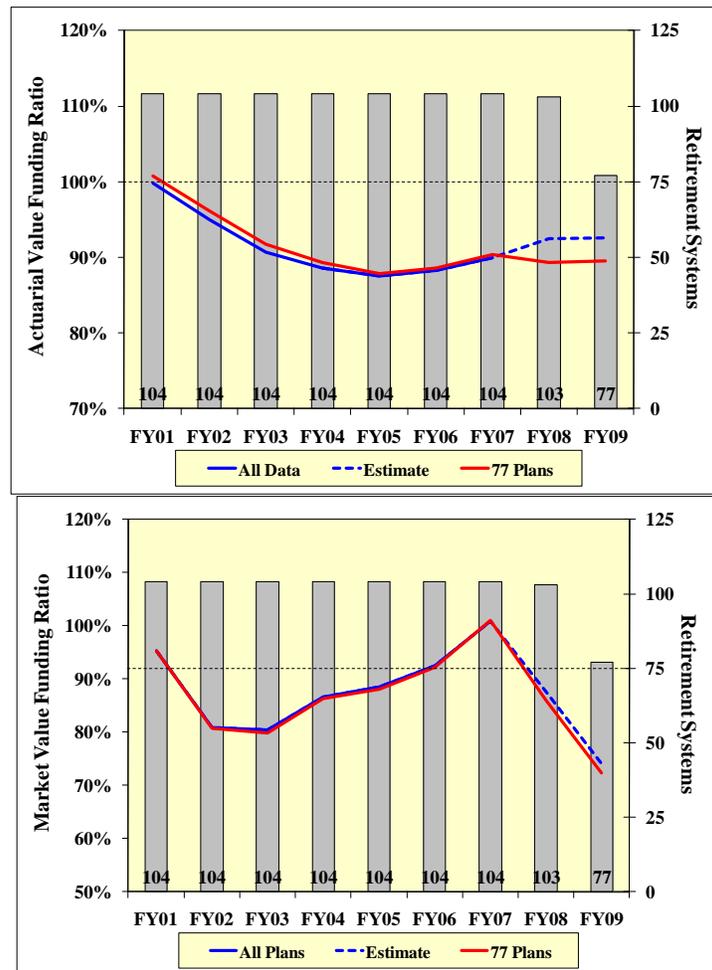
Aggregate statistics such as these can mask the underlying fiscal strength or weakness of individual plans because assets in well-funded retirement systems are not transferable to underfunded systems. Exhibit 2 shows that 99 percent of these 77 city and county pension systems, or 76 pension systems, have assets less than liabilities. If we look only at these 76 underfunded systems, their combined assets as a percentage of liabilities total 72.3% percent and their combined unfunded liabilities total -\$115 billion. Conversely, the funding ratio of the one system in our survey at fully-funded status stands at 103%.

It is important to note, as with any sample, there exists some level of statistical error. As can be seen by comparing Exhibits 1 and 2, the sample of 77 retirement systems which reported 2009 data had lower funded status based on actuarial value of assets than seen historically in the complete set of 104 city and county retirement plans. Exhibit 3 provides a graphical comparison between the historical data of all plans versus the subset of 77 plans with more recently reported data. The dotted line represents Wilshire's



estimated actuarial funding ratio for the complete set of 104 plans, which is derived from the historical relationship between the 77 plan sample and the complete set of 104 plans. Using this approach one can reasonably expect an actuarial funding ratio of approximately 93 percent once all plans have reported 2009 actuarial data. This estimation approach and graphical representation of estimated data will be used throughout the remainder of this report.

**Exhibit 3**  
**Funding Ratio Comparison of 77 Plan Sample vs. Complete Set of 104 Plans**



*Funding Ratios*

Expanding on Exhibit 3, Exhibit 4 shows the aggregate, average, median, 25<sup>th</sup>, and 75<sup>th</sup> percentile market value funding ratios for the city and county pension systems by fiscal year. Market value funding ratios fell between 2001 and 2002, and generally improved from 2002 to 2007. The rate of change in the most recent years however, erased all the gains earned in the preceding five year period.



### Exhibit 4 Market Value Funding Ratios by Fiscal Year for 104 Plans

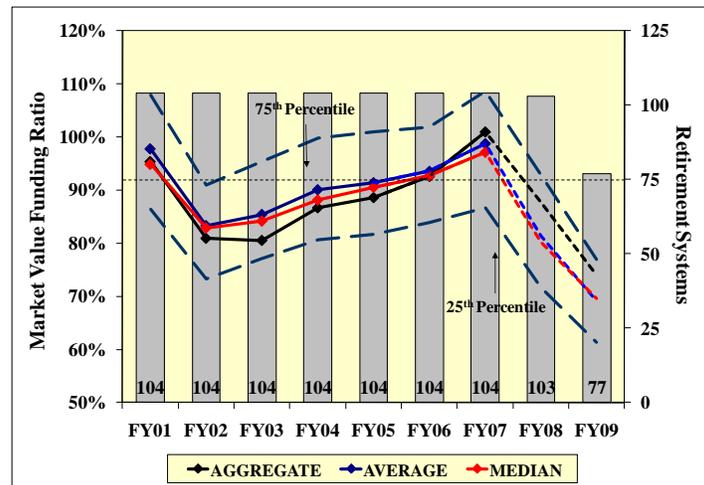
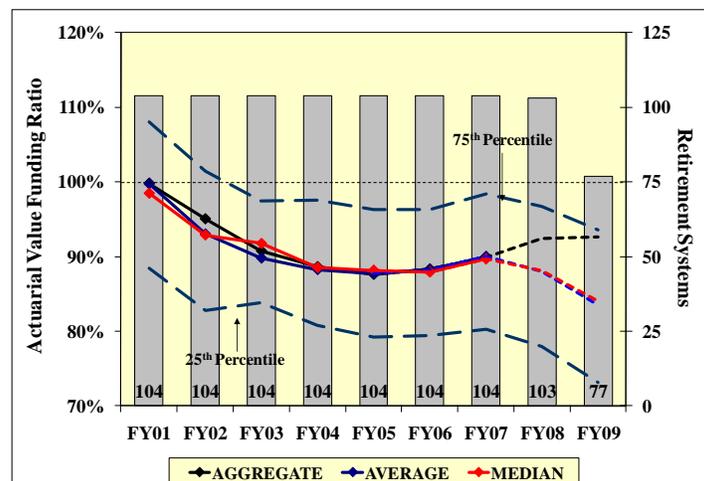


Exhibit 5 shows the same information as Exhibit 4, except it uses actuarial value of assets to determine funding ratios. Similar to Exhibit 4, funding ratios generally fell between 2001 and 2002. However, unlike Exhibit 4, funding ratios based on actuarial value of assets continued to fall through 2005 and only stabilized in 2006 to experience a slight increase during 2007 only to retrace back to 2006 levels in 2008 and to fall further in 2009. In contrast to market value funding ratios, actuarial value funding ratios tend to move slower as a result of the smoothing of values.

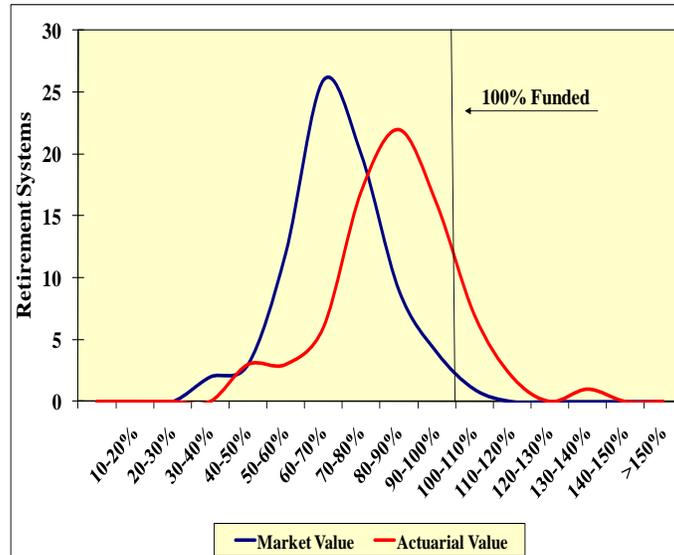
### Exhibit 5 Actuarial Value Funding Ratios by Fiscal Year for 104 Plans



The graph in Exhibit 6 gives a more detailed picture of the fiscal condition for the 77 city and county retirement systems which reported actuarial values for 2009.



### Exhibit 6 Distribution of 77 City & County Pension Systems by FY09 Funding Ratio



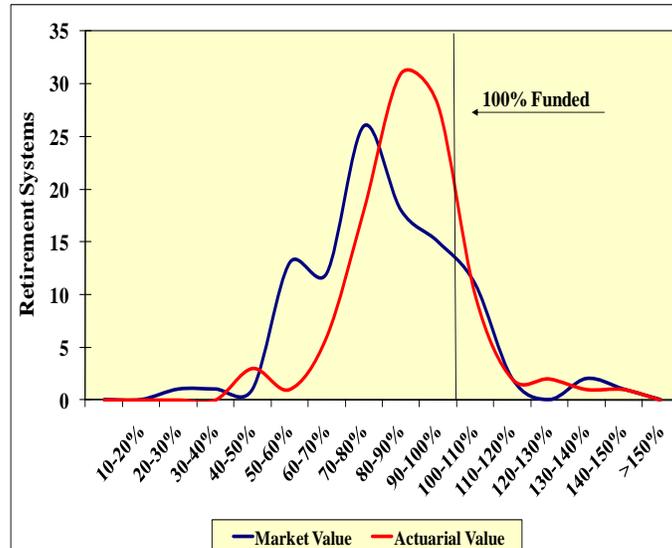
Distribution	Bucket Count				Distribution	Cumulative Count			
	Market Value		Actuarial Value			Market Value		Actuarial Value	
	Count	% of Total	Count	% of Total	Count	% of Total	Count	% of Total	
0-50%	5	6%	3	4%	0-50%	5	6%	3	4%
50-60%	12	16%	3	4%	0-60%	17	22%	6	8%
60-70%	26	34%	6	8%	0-70%	43	56%	12	16%
70-80%	20	26%	17	22%	0-80%	63	82%	29	38%
80-90%	9	12%	22	29%	0-90%	72	94%	51	66%
90-100%	4	5%	16	21%	0-100%	76	99%	67	87%
100-110%	1	1%	7	9%	0-110%	77	100%	74	96%
110-120%	0	0%	2	3%	0-120%	77	100%	76	99%
120-130%	0	0%	0	0%	0-130%	77	100%	76	99%
130-140%	0	0%	1	1%	0-140%	77	100%	77	100%
140-150%	0	0%	0	0%	0-150%	77	100%	77	100%
>150%	0	0%	0	0%	>150%	77	100%	77	100%
<b>Total</b>	<b>77</b>	<b>100%</b>	<b>77</b>	<b>100%</b>	<b>Total</b>	<b>77</b>	<b>100%</b>	<b>77</b>	<b>100%</b>

Exhibit 6 shows the distribution of plan funded ratios. Of the 76 plans that are underfunded, five plans have assets less than 50 percent of liabilities; 43 plans have assets less than 70 percent of liabilities; and 63 plans have assets less than 80 percent of liabilities. Using actuarial value of assets to determine funding ratios, 67 of the 77 plans, or 87 percent, have assets below liabilities. Three plans have assets less than 50 percent of liabilities; twelve plans have assets less than 70 percent of liabilities; and 29 plans have assets less than 80 percent of liabilities.

Similar to Exhibit 6, the graph in Exhibit 7 examines the fiscal condition of the 103 city and county retirement systems which provided actuarial values for 2008.



### Exhibit 7 Distribution of 103 City & County Pension Systems by FY08 Funding Ratio



Distribution	Bucket Count				Distribution	Cumulative Count			
	Market Value		Actuarial Value			Market Value		Actuarial Value	
	Count	% of Total	Count	% of Total	Count	% of Total	Count	% of Total	
0-50%	3	3%	3	3%	0-50%	3	3%	3	3%
50-60%	13	13%	1	1%	0-60%	16	16%	4	4%
60-70%	12	12%	6	6%	0-70%	28	27%	10	10%
70-80%	26	25%	18	17%	0-80%	54	52%	28	27%
80-90%	18	17%	31	30%	0-90%	72	70%	59	57%
90-100%	15	15%	28	27%	0-100%	87	84%	87	84%
100-110%	11	11%	10	10%	0-110%	98	95%	97	94%
110-120%	2	2%	2	2%	0-120%	100	97%	99	96%
120-130%	0	0%	2	2%	0-130%	100	97%	101	98%
130-140%	2	2%	1	1%	0-140%	102	99%	102	99%
140-150%	1	1%	1	1%	0-150%	103	100%	103	100%
150-160%	0	0%	0	0%	0-160%	103	100%	103	100%
<b>Total</b>	<b>103</b>	<b>100%</b>	<b>103</b>	<b>100%</b>	<b>Total</b>	<b>103</b>	<b>100%</b>	<b>103</b>	<b>100%</b>

Using market value of assets to determine funding ratios, 87 of the 103 plans, or 84 percent, had assets below liabilities. Three plans had assets less than 50 percent of liabilities; 28 plans had assets less than 70 percent of liabilities; and 54 plans had assets less than 80 percent of liabilities. Using actuarial value of assets to determine funding ratios, 87 of the 98 plans, or 84 percent, had assets below liabilities. Three plans had assets less than 50 percent of liabilities; 10 plans had assets less than 70 percent of liabilities; and 28 plans had assets less than 80 percent of liabilities.

#### *Unfunded Actuarial Accrued Liability*

The financial health of retirement systems can also be measured by comparing the size of the unfunded actuarial accrued liability (UAAL) to different metrics. Since assets under



Governmental Accounting Standards Board (GASB) Statement No. 25<sup>2</sup> are based on actuarial value, this section calculates the UAAL using actuarial value of assets. Exhibit 8 shows the median size of the UAAL relative to the covered payroll over the last nine years for the 104 retirement systems. Exhibit 8 also shows the 25<sup>th</sup> and 75<sup>th</sup> percentile for each year.

**Exhibit 8**  
**UAAL as a Percentage of Covered Payroll by Fiscal Year for 104 Plans**

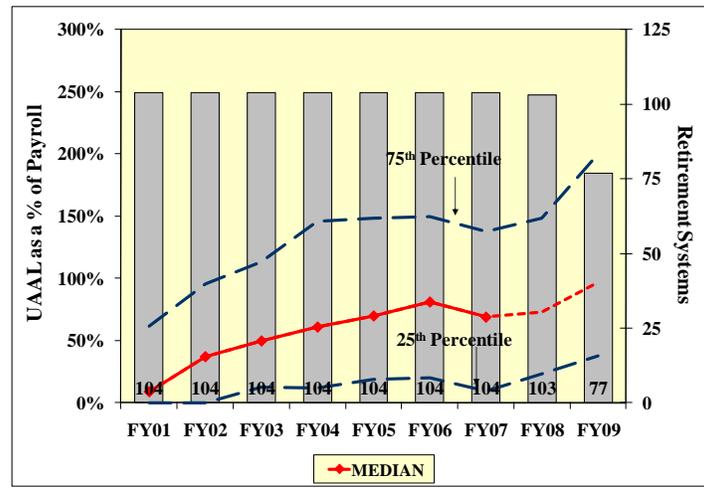
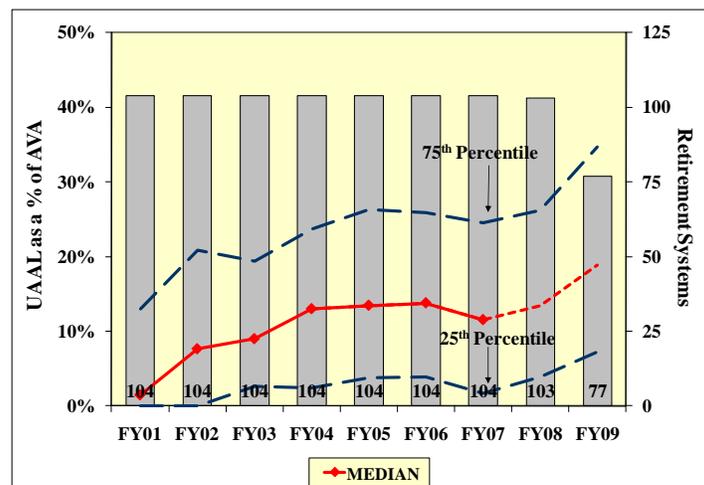


Exhibit 9 shows the median size of the UAAL relative to the actuarial value of assets over the last eight years for the 104 plans. Exhibit 9 also shows the 25<sup>th</sup> and 75<sup>th</sup> percentile for each year.

**Exhibit 9**  
**UAAL as a Percentage of Actuarial Value of Assets by Fiscal Year for 104 Plans**

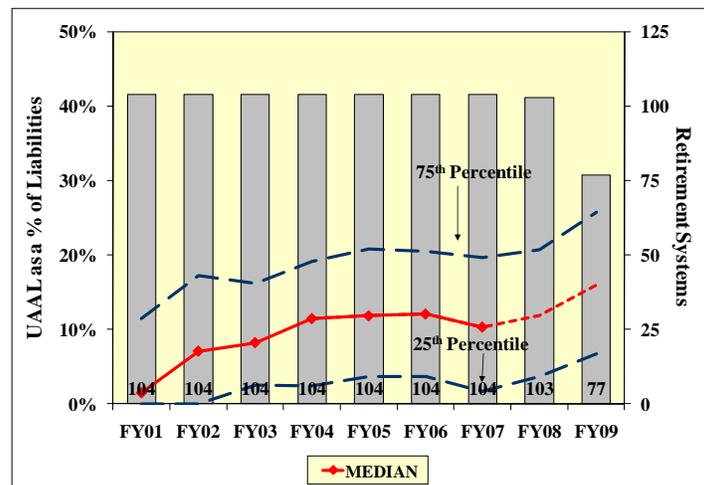


<sup>2</sup> GASB No. 25, *Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans*.



Exhibit 10 shows the median size of the UAAL relative to the actuarial accrued liability over the last nine years for the 104 plans. Exhibit 10 also shows the 25<sup>th</sup> and 75<sup>th</sup> percentile for each year.

**Exhibit 10**  
**UAAL as a Percentage of Accrued Liability by Fiscal Year for 104 Plans**



The median, 25<sup>th</sup> and 75<sup>th</sup> percentile ratios of UAAL to actuarial accrued liability and actuarial value of assets have risen since last year, continuing the rise seen in 2008. These trends would appear to indicate a continuation of the slow historical decline of funded status relative to actuarial asset value of earlier years. However, if the UAAL were calculated using the market value of assets, the negative market returns during 2008 and early 2009 would have led to a much larger increase in the UAAL relative to these metrics, reflecting a substantial deterioration in the financial health for most city and county retirement systems.

*Market Value of Assets versus Actuarial Value of Assets*

As mentioned previously, the actuarial value of assets is often calculated using a smoothing method in order to reduce the effects of market volatility when determining contribution rates. For example, a 5-year smooth market value method would recognize 20 percent of the gain or loss<sup>3</sup> in the market value of assets over 5 years. Therefore, the poor market returns from 2008 will still be recognized when calculating the actuarial value of assets in future periods through FY 2012.

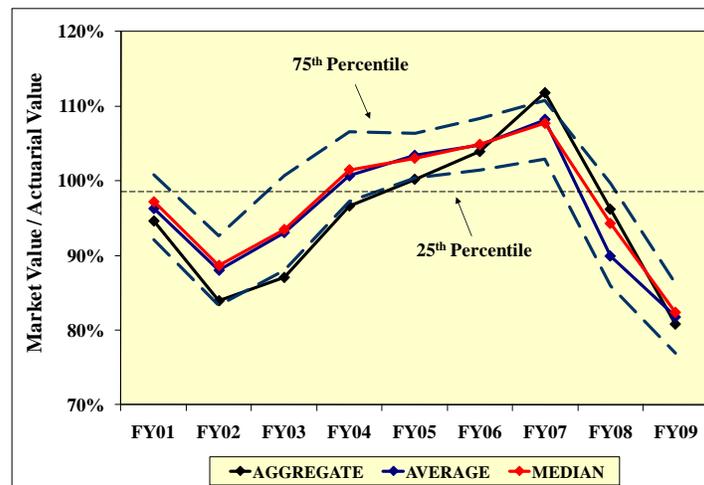
Exhibit 11 shows the aggregate, average, and median ratio of the market value of assets (MVA) to the actuarial value of assets (AVA) over the last nine years for the 77 retirement systems which reported actuarial values for 2009. Exhibit 11 also shows the 25<sup>th</sup> and 75<sup>th</sup> percentile for each year. During FY02, market values fell dramatically

<sup>3</sup> A gain (loss) occurs when the actual rate of return is greater than (less than) the assumed rate of return.



relative to actuarial values since only a fraction of the poor market return during the year was recognized when calculating the actuarial value of assets. From FY03 to FY06, market values increased relative to actuarial values for the same reason, particularly since the actuarial value of assets was still recognizing the poor market returns from 2002. In 2008 and 2009, the market value of assets fell sharply relative to actuarial values, and similar to FY02, the actuarial value of assets for FY08 reflects only a portion of the decline in 2008 and a greater proportion of the positive performance experienced from 2003 to 2007. As global markets began their recovery starting late in the first quarter of 2009, plan market valuations had little time to regain ground lost during the market dislocations before plans compiled their 2009 annual reports.

**Exhibit 11**  
**MVA as a Percentage of AVA by Fiscal Year for 77 Retirement Systems**





## **Asset Allocation**

In this section we examine the investment strategies employed by city and county retirement systems. The average asset allocation across all 104 city and county retirement systems is shown below in Exhibit 12.

**Exhibit 12**  
**Average Asset Allocation for City & County Pension Plans<sup>4</sup>**

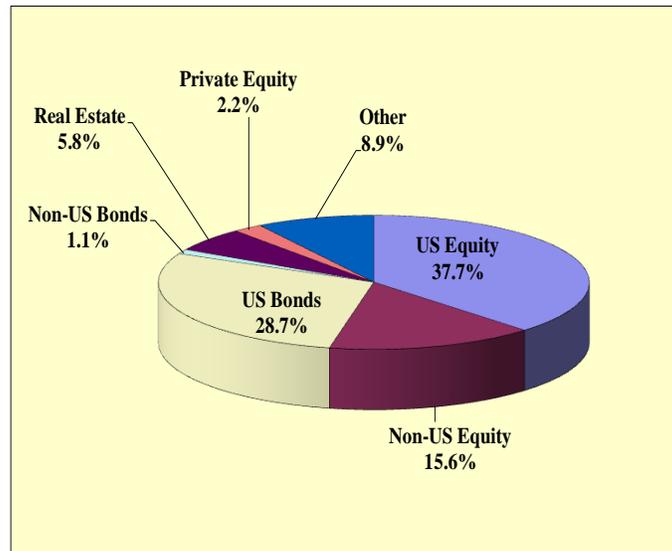


Exhibit 13 examines the change in average asset allocation for city and county pension plans from 2004 to present. During this period, the average allocations to U.S. Bonds decreased by -1.9 percent as did allocations to U.S. Equities, by -9.1 percent. Conversely, the average allocation to non-US equities increased from 12.9 percent to 15.6 percent, continuing the trend toward reducing the home country bias<sup>5</sup> in institutional portfolios. In addition, allocations to real estate rose 1.5 percent.

<sup>4</sup> As of each retirement system's most recent financial report

<sup>5</sup> For more discussion on home country bias, see Foresti and Rush: "Examining the Home-Country Bias: There's No Place Like Home. There's No Place Like Home ... Or is there?" Wilshire Consulting, April 16, 2008.



**Exhibit 13**  
**Average Asset Allocation for City & County Pension Plans<sup>6</sup>**

	<u>2004</u>	<u>2009</u>	<u>Change</u>
<b>Equity</b>			
US Equity	46.8 %	37.7 %	-9.1 %
Non-US Equity	12.9	15.6	2.7
Real Estate	4.3	5.8	1.5
Private Equity	1.4	2.2	0.8
Equity Subtotal	65.4	61.3	-4.1
<b>Debt</b>			
US Bonds	30.6	28.7	-1.9
Non-US Bonds	1.4	1.1	-0.3
Other	2.6	8.9	6.3
Debt Subtotal	34.6	38.7	4.1

\* Return and Risk are based on Wilshire Consulting's current asset class assumptions (exhibit 14)

Portfolio return and risk expectations can be calculated using assumptions for the major asset classes together with each retirement system's actual asset allocation. Exhibit 14 gives Wilshire's long-term return and risk assumptions for each asset class. We view these as being fairly mainstream assumptions among investment professionals.

**Exhibit 14**  
**Wilshire Consulting's 2010 Asset Class Assumptions**

	<u>Expected</u>	
	<u>Return</u>	<u>Risk</u>
U.S. Equity	7.50 %	16.00 %
Non-U.S. Equity	7.50	17.00
Private Equity	10.00	26.00
Real Estate	6.50	15.00
U.S. Bonds	4.25	5.00
Non-U.S Bonds	3.90	4.00

Exhibit 15 contains summary statistics on asset allocation for all city and county retirement systems. The median allocation to U.S. equities is 37 percent and 17 percent to non-U.S. equities. However, as the lowest and highest columns suggest, there is considerable variability in allocations among individual systems. The median city and county pension fund has an expected return, by Wilshire's estimate, of 6.5 percent, which is 1.5 percentage points less than the current median actuarial interest rate of 8.0 percent.

<sup>6</sup> As of each retirement system's most recent financial report.



### Exhibit 15 Summary Asset Allocation Statistics for City & County Systems

	<u>Lowest (%)</u>	<u>Median (%)</u>	<u>Highest (%)</u>
U.S. Equity	0.0 %	36.9 %	75.7 %
Non-U.S. Equity	0.0	17.0	36.1
Private Equity	0.0	0.0	18.0
Real Estate	0.0	5.1	24.7
U.S. Bonds	0.0	29.4	53.1
Non-U.S Bonds	0.0	0.0	20.2
Other	0.0	5.4	57.9
<b>Expected Returns</b>	<b>4.4 %</b>	<b>6.5 %</b>	<b>7.3 %</b>

Exhibit 16 plots the expected return and risk for each of the 104 city and county retirement systems based upon their actual asset allocation. Systems which plot in the upper right employ more aggressive asset mixes while points in the lower left represent systems with more conservative mixes. The horizontal line is positioned at a return equal to 8.0 percent, the current median actuarial interest rate assumption used by city and county pension plans.

Using Wilshire’s 2010 long-term return and risk forecasts, none of the 104 city and county retirement systems is expected to earn long-term asset returns that equal or exceed their actuarial interest rate assumption. This is down from the two city and county retirement systems that were expected to earn long-term returns that equaled or exceeded their actuarial interest rate assumption in last year’s report.

### Exhibit 16 Projected Return & Risk by City & County Pension System

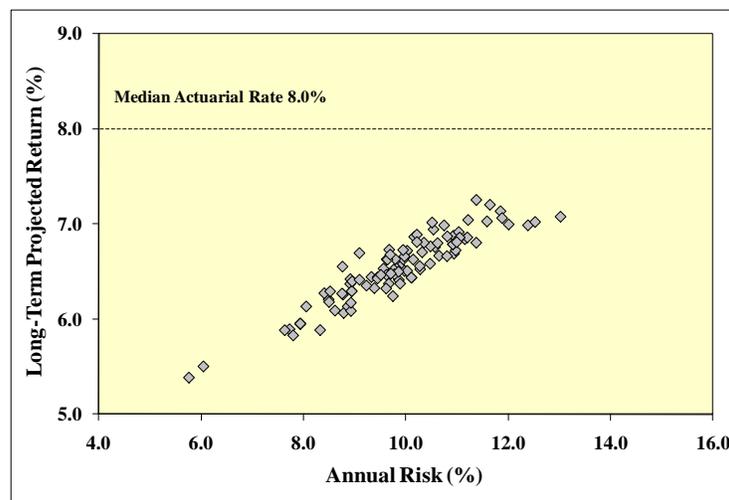
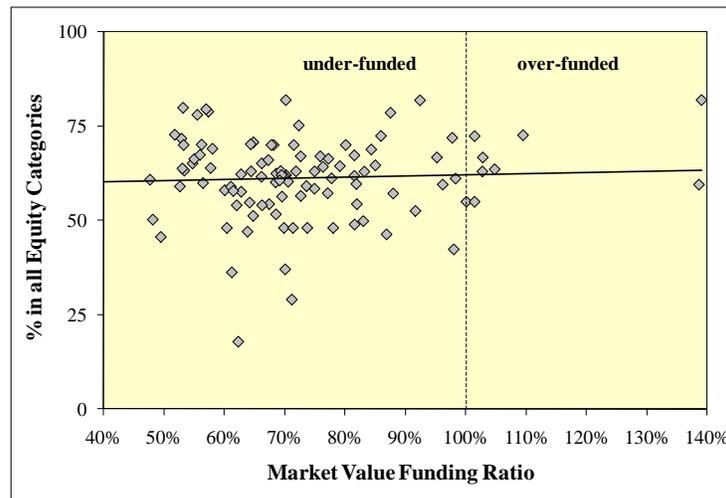


Exhibit 17 addresses the relationship between asset allocation and funding for all city and county systems. The allocation to equity asset classes, a proxy for investment aggressiveness, is plotted on the vertical scale. The market value funding ratio is shown



on the horizontal scale. A linear trend line is drawn through the scatter plot of data to provide a signal of the relationship between the two metrics and a vertical dotted line separates overfunded plans from underfunded plans.

**Exhibit 17**  
**Asset Allocation & Actuarial Funding**



Casual observation reveals that overfunded plans have a tighter range of equity allocations than underfunded plans. While the horizontal linear trend line in Exhibit 17 has a slight upward slope, the number of over-funded plans versus the sample and the extreme market conditions of 2008 and early 2009 leave some room to question the mildly positive relationship. Statistically, the correlation between the allocation to equity and plan funding ratio is quite small. In summary, city and county retirement systems have a broad spectrum of asset allocations that appear to be unrelated to the size of their unfunded liabilities.

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## **Appendix A: City and County Retirement Systems**

<b>Retirement System</b>	<b>Report Date</b>
Alameda County Employees' Retirement Association (ACERA)	12/31/2009
Anne Arundel County Detention Officers' & Deputy Sheriffs' Service Retirement Plan	12/31/2009
Anne Arundel County Employees' Retirement Plan	12/31/2009
Anne Arundel County Fire Service Retirement Plan	12/31/2009
Anne Arundel County Police Service Retirement Plan	12/31/2009
Arlington County Employees' Retirement System	6/30/2009
Charlotte Firefighters' Retirement System	6/30/2009
City & County Of San Francisco Retirement System (SFERS)	6/30/2009
City Of Austin Employees' Retirement System (COA ERS)	12/31/2009
City Of Baton Rouge & Parish Of East Baton Rouge Employees' Retirement System (CPERS)	12/31/2009
City Of Birmingham Retirement & Relief System	6/30/2009
City Of Boston Retirement System	6/30/2009
City Of Cincinnati Retirement System	12/31/2009
City Of Fresno Employees Retirement System	6/30/2009
City Of Fresno Fire & Police Retirement System	6/30/2009
City Of Gainesville General Employees' Pension Plan	9/30/2009
City Of Gainesville Police Officers & Firefighters Consolidated Retirement Plan	9/30/2008
City Of Grand Rapids General Retirement System	6/30/2009
City Of Grand Rapids Police & Fire Retirement System	12/31/2009
City Of Jacksonville General Employees Pension Plan	9/30/2009
City Of Jacksonville Police & Fire Pension Plan	9/30/2009
City Of Los Angeles Water & Power Employees' Retirement Plan	6/30/2008
City Of Memphis Retirement System	6/30/2008
City Of Oakland Police & Fire Retirement System (PFRS)	6/30/2008
City Of Phoenix Employees' Retirement Plan (COPERS)	6/30/2009
City Of Richmond Retirement System	6/30/2009
City Of Sacramento Employees' Retirement System (SCERS)	6/30/2009
City Of San Jose Police & Fire Department Retirement Plan	6/30/2009
City Of Tallahassee Pension Plan	9/30/2008
Contra Costa County Employee'S Retirement Association (CCERA)	12/31/2009
Dallas Police & Fire Pension System	12/31/2009
Denver Employees Retirement Plan (DERP)	12/31/2009
Denver Public Schools Retirement System (DPSRS)	12/31/2008
El Paso City Employees Pension Fund (CEPF)	8/31/2009
El Paso City Firemen & Policemen's Pension Fund (FPPF)	8/31/2008
Elected Officials' Retirement System Of The City Of Baltimore	6/30/2009
Employees' Retirement Fund Of The City Of Dallas	12/31/2008
Employees' Retirement Fund Of The City Of Fort Worth	9/30/2009
Employees' Retirement System Of Baltimore County	6/30/2009
Employees' Retirement System Of The City Of Baltimore	6/30/2009
Employees' Retirement System Of The City Of Milwaukee (MERS)	12/31/2009
Employees' Retirement System Of The City Of Norfolk	6/30/2009
Employees' Retirement System Of The County Of Milwaukee	12/31/2009
Fairfax County Employees' Retirement System (ERS)	6/30/2009
Fairfax County Police Officers Retirement System (PORS)	6/30/2009
Fairfax County Uniformed Retirement System (URS)	6/30/2009
Federated City Employees' Retirement System Of San Jose (FCERS)	6/30/2009
Fire & Police Employees' Retirement System Of The City Of Baltimore	6/30/2009
Fire & Police Pension Fund, San Antonio	9/30/2009
Firemen's Annuity & Benefit Fund Of Chicago	12/31/2008
Fresno County Employees' Retirement Association (FCERA)	6/30/2009
Fulton County Employees Retirement System Pension Plan	12/31/2008



## **Appendix A: (cont.)**

General Retirement System Of The City Of Detroit (DGRS)	6/30/2008
Houston Firefighters' Relief & Retirement Fund (HFRRF)	6/30/2008
Houston Municipal Employees Pension System (HMEPS)	6/30/2008
Houston Police Officers' Pension System (HPOPS)	6/30/2008
Howard County Police & Fire Employees' Retirement Plan	6/30/2008
Howard County Retirement Plan	6/30/2008
Imperial County Employees' Retirement System (ICERS)	6/30/2009
Kansas City Police Employees' Retirement System (KCPERS)	4/30/2009
Kern County Employees' Retirement Association (KCERA)	6/30/2009
Knox County Teachers' DB Plan	6/30/2009
Los Angeles City Employees' Retirement System (LACERS)	6/30/2009
Los Angeles County Employees Retirement Association (LACERA)	6/30/2009
Los Angeles County Metropolitan Transportation Authority	6/30/2009
Los Angeles Fire & Police Pension Systems	6/30/2009
Marin County Employees Retirement Association (MCERA)	6/30/2007
Minneapolis Employees' Retirement Fund (MERF)	6/30/2009
Montgomery County Employees' Retirement System	6/30/2009
Montgomery County Public Schools Employees' Retirement & Pension System (MCPS)	6/30/2009
Municipal Employees' Annuity & Benefit Fund Of Chicago	12/31/2009
New York City Employees' Retirement System (NYCERS)	6/30/2009
New York City Police Pension Fund (NYCPPF)	6/30/2009
Oakland County Public Employees' Retirement System	9/30/2009
Oakland County Road Commission Public Employees' Retirement System	12/31/2008
Orange County Employees Retirement System (OCERS)	12/31/2009
Orlando Firefighter Pension Fund	9/30/2009
Orlando General Employees' Pension Fund	9/30/2009
Orlando Police Pension Fund	9/30/2009
Police & Firemen Retirement System Of The City Of Detroit (PFRS)	6/30/2009
Policemen's Annuity & Benefit Fund Of Chicago	12/31/2009
Prince George's County, Maryland Pension Trust Fund	6/30/2009
Public School Retirement System Of The City Of St. Louis (PSRSTL)	12/31/2008
Public School Teachers' Pension & Retirement Fund Of Chicago (CTPF)	6/30/2009
Retirement System For City Of Philadelphia	6/30/2009
Sacramento County Employees' Retirement System (SCERS)	6/30/2009
San Bernardino County Employees' Retirement Association (SBCERA)	6/30/2009
San Diego City Employees Retirement System (SDCERS)	6/30/2009
San Diego County Employees Retirement Association (SDCERA)	6/30/2009
San Joaquin County Employees' Retirement Association (SJCERA)	12/31/2008
San Luis Obispo County Pension Trust	12/31/2008
San Mateo County Employees' Retirement Association (SamCERA)	6/30/2009
Santa Barbara County Employees' Retirement System (SBCERS)	6/30/2009
Santa Clara Valley Transportation Authority Amalgamated Transit Union Pension Plan	6/30/2009
Seattle City Employees' Retirement System (SCERS)	12/31/2008
Sonoma County Employees' Retirement Association (SCERA)	12/31/2008
St. Louis County, Missouri County Employees' Retirement Plan	12/31/2008
St. Paul Teachers' Retirement Fund Association (SPTRFA)	6/30/2009
Tacoma Employees' Retirement System (TERS)	12/31/2009
Teachers' Retirement System Of The City Of New York (TRS)	6/30/2009
Texas County & District Retirement System (TCDRS)	12/31/2008
The Oklahoma City Employee Retirement System (OCERS)	6/30/2009
Tulare County Employees' Retirement Association (TCERA)	6/30/2009
Ventura County Employees' Retirement Association (VCERA)	6/30/2008



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