

**Arizona Elected Officials Retirement Plan**

**Experience Study**

**July 1, 2001 through June 30, 2006**

March 13, 2007

The Fund Manager  
Arizona Elected Officials Retirement Plan  
Phoenix, Arizona

This report contains the results of an Experience Study for the Arizona Elected Officials Retirement Plan covering the period from July 1, 2001 through June 30, 2006.

The Experience Study was based upon the data submitted by the Retirement Plan for the annual actuarial valuations as of June 30, 2001, 2002, 2003, 2004, 2005 and 2006.

The results of the Experience Study are used in the process of selecting the actuarial assumptions to be used in the annual actuarial valuations of the Retirement Plan.

Respectfully submitted,



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CC: Mr. James Hacking, Administrator  
Arizona Elected Officials  
Retirement Plan

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***Section One:***

***Introduction and Summary of Experience***

## **Purpose of the Experience Study**

The purpose of this Experience Study is to compile and analyze the actual demographic experience of the Retirement Plan. This information is then used in the process of determining the actuarial assumptions for the annual actuarial valuations of the Retirement Plan.

## **Period Covered by the Study**

This Experience Study covers the 5 year period from July 1, 2001 through June 30, 2006.

The demographic experience includes the following:

- Withdrawal rates
- Retirement rates (including Deferred Retirement Option Plan)
- Disability rates
- Mortality rates

The economic experience includes the following:

- Investment return rates
- Inflation rates
- Across-the-board salary increases

## **Summary of Results**

### **Withdrawal Rates**

Withdrawal rates were higher than currently assumed in the 4<sup>th</sup> and 8<sup>th</sup> years of service and lower at the older ages after 8 years of service. The recommended assumptions expand the service related rates to 9 years and decrease the age related rates after age 40.

### **Retirement Rates**

Currently assumed rates are age related. We tabulated retirements on both an age related basis with 20 years of service and a service related bases at any age with at least 5 years of service. The service based rates indicate higher rates for the 12<sup>th</sup>, 16<sup>th</sup>, 20<sup>th</sup> and 25<sup>th</sup> years of service. This experience is reflected in the recommended assumptions.

### **Disability Rates**

Disability rates were less than currently assumed. The recommended rates were reduced to reflect this experience.

### **Mortality Rates**

There were fewer deaths than currently assumed for active members under age 65. For retired lives, there were fewer deaths for both males and females than currently assumed, except for females over age 85.

### **Investment Return Rates**

Rates of recognized investment return based on the smoothed funding value of assets was less than currently assumed.

### **Inflation and Across-the-Board Salary Increase Rates**

Rates of inflation and across-the-board salary increases were less than currently assumed.



***Section Two:***  
***Withdrawal Rates***

## Withdrawal Rates

<u>Age</u>	<u>Service</u>	<u>Withdrawals</u>		<u>Difference</u>	<u>Percent</u>
		<u>Actual</u>	<u>Expected</u>		<u>Withdrawing</u>
All	0<1	34	18	16	14.72%
	1<2	21	18	3	9.11%
	2<3	12	17	-5	5.66%
	3<4	11	17	-6	5.33%
	4<5	25	14	11	14.08%
	5<6	6	10	-4	3.60%
	6<7	15	10	5	9.46%
	7<8	7	9	-2	4.68%
	8<9	16	8	8	12.65%
Under 20	9 and up	0	0	0	
	20-24	0	0	0	
	25-29	0	0	0	
	30-34	0	0	0	
	35-39	2	0	2	30.77%
	40-44	2	2	0	7.02%
	45-49	5	6	-1	4.76%
	50-54	3	14	-11	1.28%
	55-59	4	16	-12	1.50%
	60-64	3	10	-7	1.74%
	65-69	0	5	-5	
	70 and Over	0	4	-4	

## Withdrawal Rates – Current and Recommended Assumptions

<u>Ages</u>	<u>Service</u>	<u>Current</u>	<u>Ages</u>	<u>Service</u>	<u>Recommended</u>
ALL	0<1	8.00%	ALL	0<1	12.00%
	1<2	8.00%		1<2	9.00%
	2<3	8.00%		2<3	5.00%
	3<4	8.00%		3<4	5.00%
	4<5	8.00%		4<5	12.00%
				5<6	3.00%
				6<7	9.00%
				7<8	4.00%
				8<9	10.00%
25	5 and up	6.00%			
30		6.00%	30	9 and up	6.00%
35		6.00%	35		6.00%
40		6.00%	40		6.00%
45		6.00%	45		4.00%
50		6.00%	50		1.50%
55		6.00%	55		1.50%
60		6.00%	60		1.50%

We suggest that in future actuarial valuations the data submitted be identified separately for judges and other members not subject to term limits. This would permit observation of any differences among the various groups and creation of separate withdrawal assumptions if necessary.



***Section Three:***  
***Retirement Rates***

## Retirement Rates

### Based on Age and Less Than 20 Years of Service:

<u>Age</u>	<u>Retirements</u>			<u>Percent Retiring</u>
	<u>Actual</u>	<u>Expected</u>	<u>Difference</u>	
35-39	2	0	2	6.8%
40-44	4	0	4	4.3%
45	2	2	(0)	7.5%
46	1	3	(2)	3.0%
47	1	3	(2)	2.3%
48	4	4	0	8.0%
49	1	5	(4)	1.8%
50	4	5	(1)	6.0%
51	0	6	(6)	
52	1	6	(5)	1.3%
53	5	6	(1)	6.5%
54	3	7	(4)	3.6%
55	2	4	(2)	2.4%
56	3	4	(1)	4.1%
57	2	4	(2)	2.6%
58	2	3	(1)	3.0%
59	4	4	0	5.6%
60	7	10	(3)	10.5%
61	6	6	(0)	9.9%
62	0	13	(13)	
63	1	7	(6)	2.0%
64	4	4	(0)	9.4%
65	1	6	(5)	3.3%
66	0	5	(5)	
67	0	4	(4)	
68	0	5	(5)	
69	0	5	(5)	
70 & Over	0	18	(18)	

### Based on Service and Any Age:

<u>Service</u>	<u>Retirements</u>			<u>Percent Retiring</u>
	<u>Actual</u>	<u>Expected</u>	<u>Difference</u>	
5	7			3.9%
6	8			4.8%
7	4			2.5%
8	13			8.7%
9	7			5.5%
10	10			8.6%
11	9			7.7%
12	22			19.7%
13	5			5.6%
14	5			5.9%
15	2			2.8%
16	9			14.3%
17	3			5.7%
18	3			6.0%
19	3			7.1%
20	27	5	22	62.1%
21	7	4	3	26.9%
22	4	3	1	21.1%
23	2	3	(1)	12.1%
24	3	2	1	20.7%
25	6	1	5	52.2%
26	2	1	1	28.6%
27	0	1	(1)	
28	2	1	1	36.4%
29	0	1	(1)	
30	0	1	(1)	
31	2	1	1	36.4%
32	1	0	1	33.3%
33	1	0	1	66.7%

## Retirement Rates – Current and Recommended Assumptions

<u>Age</u>	<u>Current</u>	<u>Service (Any Age)</u>	<u>Recommended</u>
45	8%	5	4%
46	8	6	4
47	8	7	4
48	8	8	8
49	8	9	8
50	8	10	8
51	8	11	8
52	8	12	15
53	8	13	5
54	8	14	5
55	5	15	5
56	5	16	15
57	5	17	5
58	5	18	6
59	5	19	7
60	15	20	60
61	10	21	25
62	25	22	20
63	15	23	20
64	10	24	20
65	20	25	50
66	20	26	30
67	20	27	30
68	20	28	30
69	20	29	30
70	100	30	100

We suggest that in future actuarial valuations the data submitted be identified separately for judges and other members not subject to term limits. This would permit observation of any differences among the various groups and creation of separate retirement assumptions if necessary.





***Section Four:***  
***Disability Rates***

## Disability Rates

<u>Age</u>	<u>Disabilities</u>			<u>Percent Disabled</u>
	<u>Actual</u>	<u>Expected</u>	<u>Difference</u>	
Under 20	0	0	0	
20-24	0	0	0	
25-29	0	0	0	
30-34	0	0	0	
35-39	0	0	0	
40-44	0	0	0	
45-49	0	1	-1	
50-54	0	2	-2	
55-59	1	3	-2	0.18%
60-64	1	3	-2	0.28%
65-69	2	0	2	1.09%
70 and Over	0	0	0	

## Current Recommended Assumption

<u>Ages</u>	<u>Current</u>	<u>Recommended</u>
25	0.15%	0.03%
30	0.16%	0.04%
35	0.23%	0.05%
40	0.34%	0.12%
45	0.52%	0.20%
50	0.83%	0.40%
55	1.45%	0.80%
60	2.00%	1.00%



***Section Five:***  
***Mortality Rates***

## Active Member Mortality Rates

<u>Age</u>	<u>Deaths</u>		<u>Difference</u>	<u>Percent Died</u>
	<u>Actual</u>	<u>Expected</u>		
Under 20	0	0	0	0.00%
20-24	0	0	0	0.00%
25-29	0	0	0	0.00%
30-34	0	0	0	0.00%
35-39	0	0	0	0.00%
40-44	0	1	-1	0.00%
45-49	0	3	-3	0.00%
50-54	3	4	-1	0.35%
55-59	3	5	-2	0.51%
60-64	3	4	-1	0.88%
65-69	5	3	2	3.70%
70 and Over	2	0	2	4.49%

## Retiree Mortality

<u>Age</u>	<u>Deaths</u>			<u>Percent Died</u>
	<u>Actual</u>	<u>Expected</u>	<u>Difference</u>	
Under 20	0	0	0	
20-24	0	0	0	
25-29	0	0	0	
30-34	0	0	0	
35-39	1	0	1	20.00%
40-44	0	0	0	
45-49	0	0	0	
50-54	0	1	-1	
55-59	3	2	1	0.99%
60-64	3	5	-2	0.72%
65-69	11	14	-3	1.65%
70-74	13	23	-10	2.00%
75-79	19	32	-13	3.13%
80-84	21	27	-6	5.72%
85-89	20	23	-3	10.10%
90-94	14	10	4	22.58%
95-99	3	4	-1	14.29%
Over 100	1	1	0	20.00%

## Retiree Mortality – By Sex

Male					Female				
Age	Deaths			Percent Died	Age	Deaths			Percent Died
	Actual	Expected	Difference			Actual	Expected	Difference	
Under 20	0	0	0		Under 20	0	0	0	
20-24	0	0	0		20-24	0	0	0	
25-29	0	0	0		25-29	0	0	0	
30-34	0	0	0		30-34	0	0	0	
35-39	1	0	1	25.00%	35-39	0	0	0	
40-44	0	0	0		40-44	0	0	0	
45-49	0	0	0		45-49	0	0	0	
50-54	0	1	-1		50-54	0	0	0	
55-59	3	2	1	1.60%	55-59	0	1	-1	
60-64	3	4	-1	1.06%	60-64	0	1	-1	
65-69	7	12	-5	1.49%	65-69	4	3	1	2.04%
70-74	11	19	-8	2.29%	70-74	2	4	-2	1.18%
75-79	15	23	-8	3.99%	75-79	4	9	-5	1.73%
80-84	13	17	-4	7.51%	80-84	8	11	-3	4.12%
85-89	10	14	-4	10.00%	85-89	10	9	1	10.20%
90-94	3	5	-2	10.71%	90-94	11	4	7	32.35%
95-99	0	1	-1		95-99	3	3	0	20.00%
Over 100	0	0	0		Over 100	1	1	0	20.00%

## Mortality Assumptions

The current mortality table for non-disabilities is the 1971 Group Annuity Mortality Table Projected to 2000 (Male), female ages set back six years.

The Society of Actuaries has published a newer table, RP-2000, based on a study of nearly 11 million life-years of exposure and more than 190,000 deaths from 100 uninsured pension plans. The Society of Actuaries committee responsible for the study determined that this volume of data was sufficient to produce valid mortality tables.

Compared with the mortality assumptions currently used for the Arizona Corrections Officer Retirement Plan, the RP-2000 table has lower rates of mortality for males and slightly higher rates for females.

### Recommendation:

We suggest that the Fund Manager consider adopting the RP-2000 mortality table for purposes of the annual actuarial valuation of the Retirement Plan, set ahead 5 years for disabilities.

The table below shows a comparison of life expectancies based on the present table and the RP-2000 table. Note that life expectancies are shown for illustration purposes. The actuarial valuation process uses the mortality rates at each age, not life expectancies.

Sample Ages	Future Life Expectancy (Years)			
	Current Assumption		Recommended	
	Males	Females	Males	Females
20	56.86	62.72	59.04	62.53
25	51.98	57.83	54.15	57.59
30	47.12	52.95	49.25	52.65
35	42.29	48.09	44.38	47.34
40	37.51	43.25	39.57	42.86
45	32.80	38.46	34.79	38.03
50	28.28	33.73	30.07	33.27
55	23.98	29.17	25.86	28.69
60	19.90	24.82	21.64	24.27
65	16.09	20.70	17.62	20.13
70	12.69	16.82	13.92	16.27
75	9.82	13.32	10.61	12.78
80	7.39	10.36	7.79	9.72
85	5.57	7.83	5.54	7.13
90	4.19	5.89	3.90	5.20

We suggest that the mortality experience be reviewed again in 3 to 5 years. If the actual mortality rates continue to be less than assumed, we recommend that the rates be projected to reflect the less than assumed mortality.



***Section Six:***  
***Economic Assumptions***

## Economic Assumptions

The economic assumptions include the rate of investment return, inflation, across-the-board salary increases and the real rates of return over inflation and across-the-board salary increases.

The current economic assumptions used for the Retirement Plan are as follows:

Investment Return	8.5%
Inflation	5.0%
Across-the-Board Salary Increases	0.5%
Real Rates of Return (Net of Expenses)	
-Over Inflation	3.5%
-Over Across-the-Board Salary Increases	3.0%

## Inflation Experience

The following table shows the rates of inflation (as measured by the Consumer Price Index) over the period of the Experience Study.

<b>Year Ended June 30</b>	<b>Increase in CPI-U</b>	<b>Assumed Inflation</b>
2002	1.1%	5.0%
2003	2.1	5.0
2004	3.3	5.0
2005	2.5	5.0
2006	4.3	5.0

Over the period of the Experience Study, inflation rates were less than the assumed 5.0% rate.

## Average Salary Increases Compared to Assumed Increases

Year Ended June 30	Increase in Average Salary*	Assumed Across-the-Board Salary Increases		
		Inflation	Other	Total
2002	0.0%	5.0%	0.5%	5.5%
2003	(0.5)%	5.0	0.5	5.5
2004	0.4	5.0	0.5	5.5
2005	3.7	5.0	0.5	5.5
2006	(0.1)	5.0	0.5	5.5

\*Based on average of salary submitted for the annual actuarial valuations.

Over the period of the Experience Study, the increases in average salary were less than the assumed increases (approximately 0.7% average annual increase over the period of the Study). Over the past 20 years the annual increase in average salaries has averaged approximately 3.5%. The pattern of salary increases is not as uniform in the Elected Officials Retirement Plan as it is in plans covering general or public safety employees. Salaries for elected officials often do not increase every year, but instead every several years in larger increments.

## Nominal Rates of Investment Return

The following table shows the nominal rates of investment return based upon the smoothed market value of assets. These nominal rates of return based on the smoothed market value are of use for the actuarial valuation, but are not to be used to compare investment performance with other retirement plans or benchmarks. The actual market value returns reported by the investment counselor should be used for that purpose.

Actuarial Valuation as of June 30	Nominal Rate of Return (Smoothed Asset Value)	Assumed Rate of Return (Net of Expenses)
2002	(0.80)%	9.00%
2003	3.08	9.00
2004	3.30	8.75
2005	2.91	8.50
2006	2.41	8.50

## Real Rates of Return

Annual Valuation June 30	Real Rate of Return Over		Assumed Real Rate of Return Over	
	Inflation	Increase in Average Salary	Inflation	Across-The Board Salary Increases
2002	(1.90)%	(0.80)%	3.5%	3.0%
2003	0.98	3.58	3.5	3.0
2004	0.00	2.90	3.5	3.0
2005	0.41	(0.79)	3.5	3.0
2006	(1.89)	2.51	3.5	3.0

### Comments

The smoothed market value of assets used for valuation purposes recognized investment income at the assumed rate and spreads the difference between the actual and assumed investment return over a 7 year period. The period was increased to 7 years from 4 years beginning with the June 30, 2003 valuation, as adopted by the Fund Manager.

If the actual economic experience is less favorable than assumed (i.e. lower investment income than assumed, greater inflation and salary increases than assumed), contribution rates will rise as the negative experience develops. Carry-forwards of negative experience from prior years are likely to result in experience losses in the next several years in the absence of very favorable investment returns.

### Recommendation

As with all of the assumptions, the economic assumptions need to be based on the long-term expected experience, not simply the rates from the 5 year experience study. The asset allocation of the Fund and the risk tolerance of the Fund Manager must be taken into consideration.

The Board should consult with its investment advisor regarding the potential returns given the asset allocation. If economic experience is expected to be less favorable than currently assumed over the long term, this should be reflected in the economic assumptions (e.g. a decrease in the assumed rate of investment return) to avoid long-term increases in funding requirements.



***Section Seven:***

***Summary of Recommended Rates***

## Demographic Assumptions

*Non-Disability Mortality Rates:* RP 2000 Healthy Annuitants

*Disability Mortality Rates:* RP 2000 Healthy Annuitants, set forward 5 years.

Sample Ages	Non-Disability Table		Disability Table	
	Future Life Expectancy (Years)		Future Life Expectancy (Years)	
	Men	Women	Men	Women
20	59.04	62.53	54.15	57.59
25	54.15	57.59	49.25	52.65
30	49.25	52.65	44.38	47.34
35	44.38	47.34	39.57	42.86
40	39.57	42.86	34.79	38.03
45	34.79	38.03	30.07	33.27
50	30.07	33.27	25.86	28.69
55	25.86	28.69	21.64	24.27
60	21.64	24.27	17.62	20.13
65	17.62	20.13	13.92	16.27
70	13.92	16.27	10.61	12.78
75	10.61	12.78	7.79	9.72
80	7.79	9.72	5.54	7.13
85	5.54	7.13	3.90	5.20
90	3.90	5.20	2.88	4.02

**Termination of Employment:** Service-related rates for first eight years of employment and age-related rates after first eight years of employment. The sample rates are as follows:

<b>Sample Ages</b>	<b>Years of Service</b>	<b>Percent Terminating Within Next Year</b>	<b>Disability Rates</b>
ALL	0	12.00%	(all years of service)
	1	9.00	
	2	5.00	
	3	5.00	
	4	12.00	
	5	3.00	
	6	9.00	
	7	4.00	
	8	10.00	
25			0.03%
30	9 and over	6.00	0.04
35		6.00	0.05
40		4.00	0.12
45		1.50	0.20
50		1.50	0.40
55		1.50	0.80
60		1.50	1.00

**Retirement Rates:** Service-related rates based on the following schedule:

<b>Service</b>	<b>% Retiring Upon Attaining Indicated Service</b>
5	4%
6	4
7	4
8	8
9	8
10	8
11	8
12	15
13	5
14	5
15	5
16	15
17	5
18	6
19	7
20	60
21	25
21	20
23	20
24	20
25	50
26	30
27	30
28	30
29	30
30	100

## **Economic Assumptions:**

The assumed rate of investment return (net of expenses) currently adopted by the Fund Manager for the annual actuarial valuations is 8.50% per annum, compounded annually.

The assumed rate of across-the-board salary increases currently adopted by the Fund Manager for the annual actuarial valuations is 5.5%, including 5.0% for inflation.

We understand that the Fund Manager is working with investment advisors regarding asset allocation and potential returns. If economic experience is expected to be less favorable than currently assumed over the long term, this should be reflected in the economic assumptions to avoid long-term increases in funding requirements.