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**DEFINED CONTRIBUTION AS AN EQUALIZING  
BENEFIT FOR U.W. WORKING WOMEN**

**Dr. Ramon J. Aldag  
July 8, 1999**

The University of Wisconsin is now drafting legislation for a University of Wisconsin Optional Retirement System (UWORS) as provided in 1997 Assembly Bill 331. With this system in place, new faculty and academic staff hires would have the choice between a defined contribution retirement plan (the Optional Retirement Plan, or ORP) and the current "hybrid" plan with its heavy defined benefit component. The ORP would offer 100% vesting of participant balances from inception and would thus provide complete pension portability.<sup>1</sup>

Two actuarial studies commissioned by the Joint Survey Committee on Retirement Systems and the Retirement Research Committee provide detailed data comparing the ORP and the current Wisconsin Retirement System (WRS).<sup>2</sup> Those studies, as well as substantial other literature, suggest that the WRS both fails to meet the needs of the modern workforce and that it offers inequitably low benefits to female faculty and academic staff. The proposed legislation is a significant step toward providing a more satisfactory and equitable benefit system and, in so doing, toward furthering the University's efforts to recruit and retain quality professionals in an increasingly volatile and competitive job market.

Several demographic items in the actuarial reports are noteworthy:<sup>3</sup>

- The percentage of female U.W. faculty and staff is rising and is projected to continue to rise. As of December 31, 1997, a total of 6,841 women were working as faculty or academic staff for the University of Wisconsin. Over the next 40 years the percentage of women is projected to increase from 28.5% to 32.6% of the faculty, and from 53.6% to 54.1% of the academic staff.<sup>4</sup>
- U.W. faculty and academic staff have much higher withdrawal rates than other employees of the UW system or teachers in general. This is evident for both females (Figure 1) and males (Figure 2).<sup>5</sup>
- Withdrawal rates of U.W. faculty and academic staff relative to other employees of the U.W. system or teachers in general are seen in those same figures to be dramatically higher at early ages and to converge at about age 50.
- Withdrawal rates for female faculty and academic staff are less "smooth" than those for males. For example, as illustrated in Figure 3, withdrawal rates for women markedly rise for several years in mid-career.<sup>6</sup> It is not uncommon for women to leave or change jobs in mid-career or to opt for early retirement. When female employees elect to take time off for family-related or career-developing pursuits, their defined benefit contribution ceases to accrue at the same growth rate as would that from a defined contribution pension plan.
- Female U.W. faculty and academic staff have higher withdrawal rates than males. For faculty, the annual withdrawal rates in a typical year average about 7.6% for females versus 5.0% for males (a 52% higher rate). For academic staff, the annual

withdrawal rates average about 10.9% for females versus 8.6% for males (a 27% higher rate).<sup>7</sup>

Taken together, the above data show that U.W. faculty and academic staff have higher withdrawal rates than other employees of the U.W. system or teachers in general, that these withdrawal rate differentials are greatest at earlier ages, and that withdrawal rates are higher and show more age-related variability for females than for males. This pattern leaves female UW faculty and academic staff disproportionately vulnerable to the severe penalties the WRS places on early-career mobility.

Since the defined benefit plan determines rates by a formula that takes into account (among other things) length of service and final average earnings, it significantly disadvantages employees who enter and leave the system periodically rather than remain for the length of their careers. As examples of the effect of these mobility trends on benefits, consider the projected annual pension per \$10,000 of starting salary in the following cases:

- An employee fresh out of college (age 25) who works for five years and then takes a leave to start a family at age 30 will have a pension worth \$867 under the WRS at age 55. If she instead chooses the Optional Retirement Plan, even at the low rate estimate, her pension would equal \$2,851 – about 3 ¼ times that under the WRS. With the high rate estimate, the ORP value would be \$4,746 – almost 5 ½ times the WRS value.<sup>8</sup>
- An employee who starts at age 25 and leaves at age 40, during the common mid-career withdrawal phase noted above, would have a pension worth \$4,220 under the WRS at age 55. Under the Optional Retirement Plan, the pension value would range from \$8,659 (low estimate) to \$13,176 (high estimate). These ORP values are, respectively, more than double and triple those for the WRS.
- In general, *even using the low rate of return estimate for the ORP*, the ORP *dominates* the WRS at a retirement age of 55 for people entering the system at any age from 25 to 45 and leaving by age 50; that is, it is better for *all* such combinations of age hired and age leaving service. At a retirement age of 65, this dominance is more pronounced, occurring (using the low rate of return estimate) for people entering the system at any age from 25 to 50 and leaving by age 55. With the high rate of return estimate and a retirement age of 65, it is *only* when people enter the system at age 50 or greater and leave service at age 65 that the WRS value exceeds that of the ORP.

In short, the ORP offers a very attractive, more equitable alternative to the WRS. Such an alternative is critical if the U.W. is to succeed in the modern workplace. Consider the following points:

- The ability of defined contribution plans to help meet the needs of employees in the dynamic, complex work environment is widely recognized. For example, a *Fortune* magazine article noted the disadvantages of defined benefit plans for mobile employees.<sup>9</sup> A *Financial Planning* article highlighted the empowering aspects of defined contribution plans.<sup>10</sup> A *National Underwriter* article emphasized the “sea change in the nature of executive pension and benefit plans” that is taking place,

pointing out how the shift toward defined contribution plans “has radically altered the demands and expectations of younger executives, affecting both their attitudes toward the benefits they will be receiving from an employer in the short term and also their expectations of how they will be funding their retirements in general.”<sup>11</sup> The article quoted a pensions expert as saying, “If a company wants to keep attracting quality employees in the current tight job market, especially talented executives under age 35, it will need to maintain a plan with an aggressive contribution schedule, address key issues such as plan portability and early vesting, and also maintain a wide variety of investment options.”

- U.S. government initiatives are attempting to break the “pension glass ceiling” for women, recognizing the disadvantages women face due to their higher job turnover and generally lower wages.<sup>12</sup> President Clinton, noting that women generally receive smaller pensions than men, has recently proposed changes to retirement plans to make them more “women-friendly.”<sup>13</sup>
- Approximately 45 other states offer their state university employees a choice when hired between joining the state’s traditional defined benefit pension system or an optional retirement plan.<sup>14</sup> That optional retirement plan is generally a money purchase plan administered by a large insurance company, similar to the ORP.
- There is a strong worldwide trend toward the offering of defined contribution pension plans. According to Bureau of Labor Statistics figures, 57% of full-time employees of medium and large establishments in the U.S. participated in defined contribution plans in 1997.<sup>15</sup> Defined contribution plans now account for half of all employer-sponsored retirement arrangements in 14 of 38 countries examined in a recent report.<sup>16</sup>

The author’s 25 years of experience with faculty recruiting suggests two other trends that are relevant to this discussion. First, faculty mobility is dramatically increasing, especially for younger faculty. As in non-academic settings, mobility is becoming the norm rather than the exception. Salary compression and related forces, among other factors, are creating a situation in which inter-university mobility is perceived as positively associated with salary increases. The increasingly common practice of resetting the “tenure clock” to zero for non-tenured faculty hired from other universities (thus giving them more time to meet tenure requirements) has accelerated this trend to greater early-career mobility. In addition, as more universities offer options to defined benefit retirement plans, job candidates have become sensitized to pension benefits quality as a major criterion of job choice.

The University of Wisconsin is committed to increasing the percentage of female faculty and academic staff. In view of that commitment and associated targeted expectations, every effort should be made to offer benefits that are both competitive and fair. The evidence summarized here suggests that the WRS is neither, and that it places the U.W. at a significant competitive disadvantage. As such, by offering an Optional Retirement System giving new hires the flexibility to select the best investment program for their specific future needs, the Legislature will both be redressing the inequities of the current system and providing a crucial aid to the University’s recruitment efforts.

Figure 1

# Withdrawal for WRS "General" Females

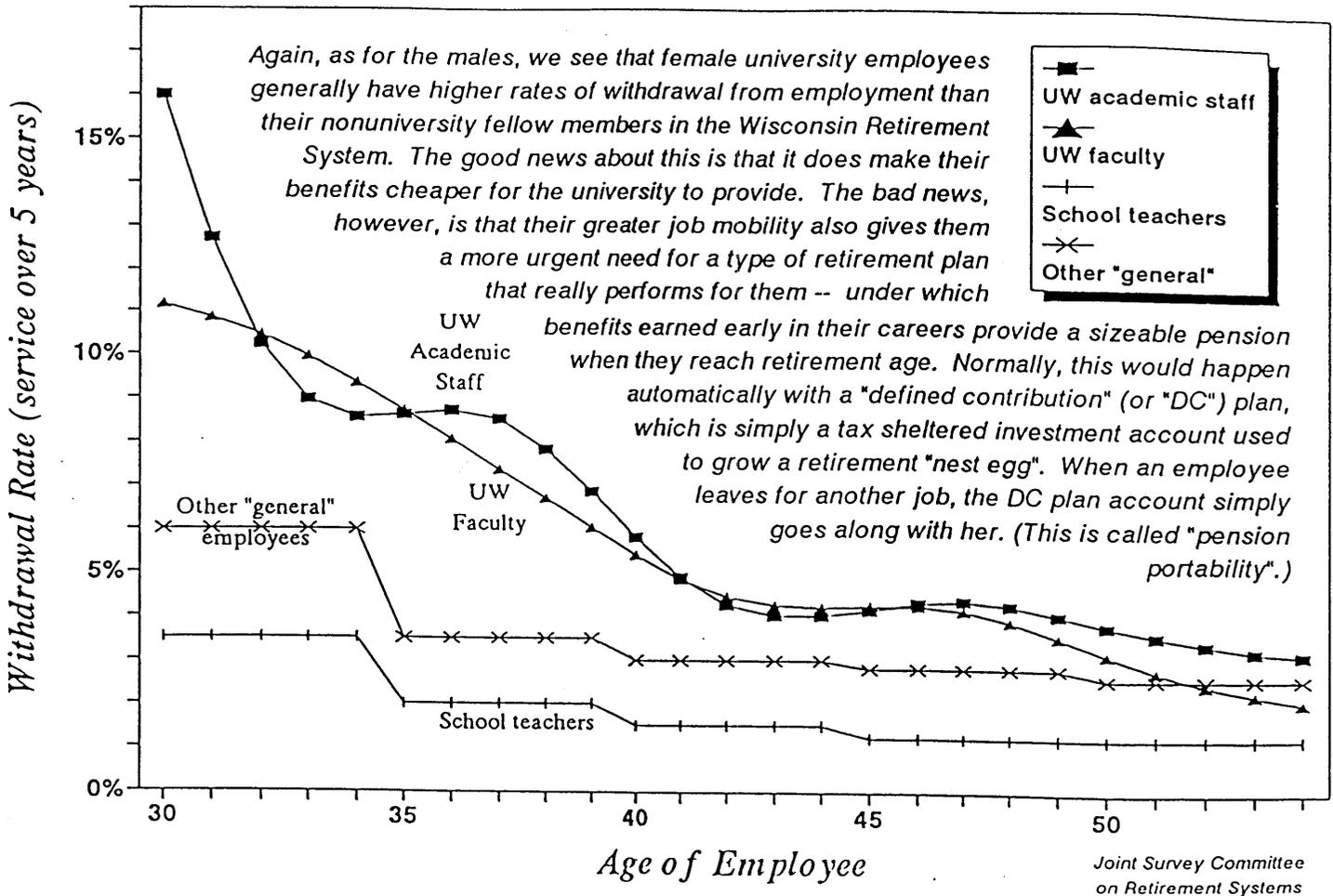


Figure 2

# Withdrawal for WRS "General" Males

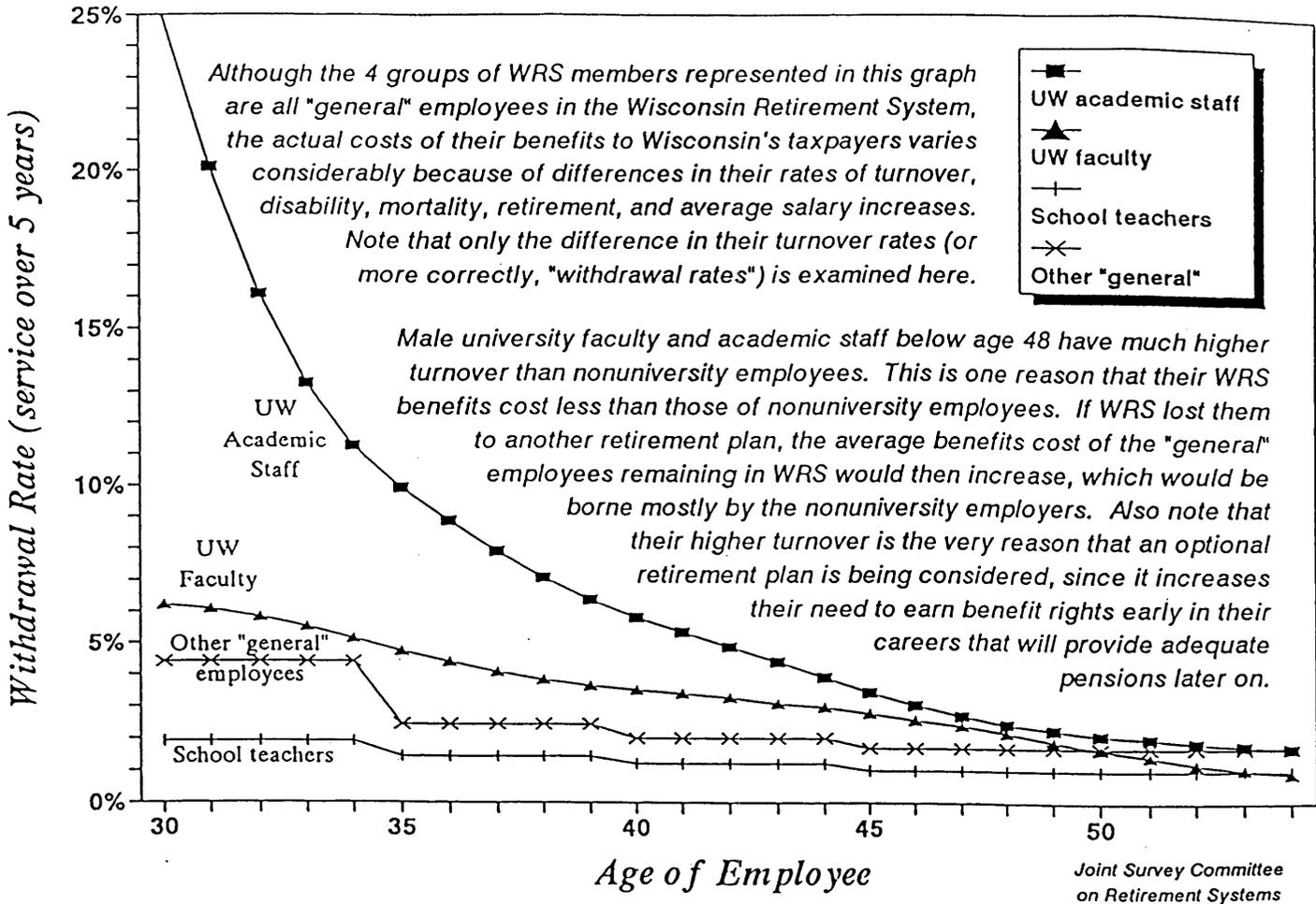
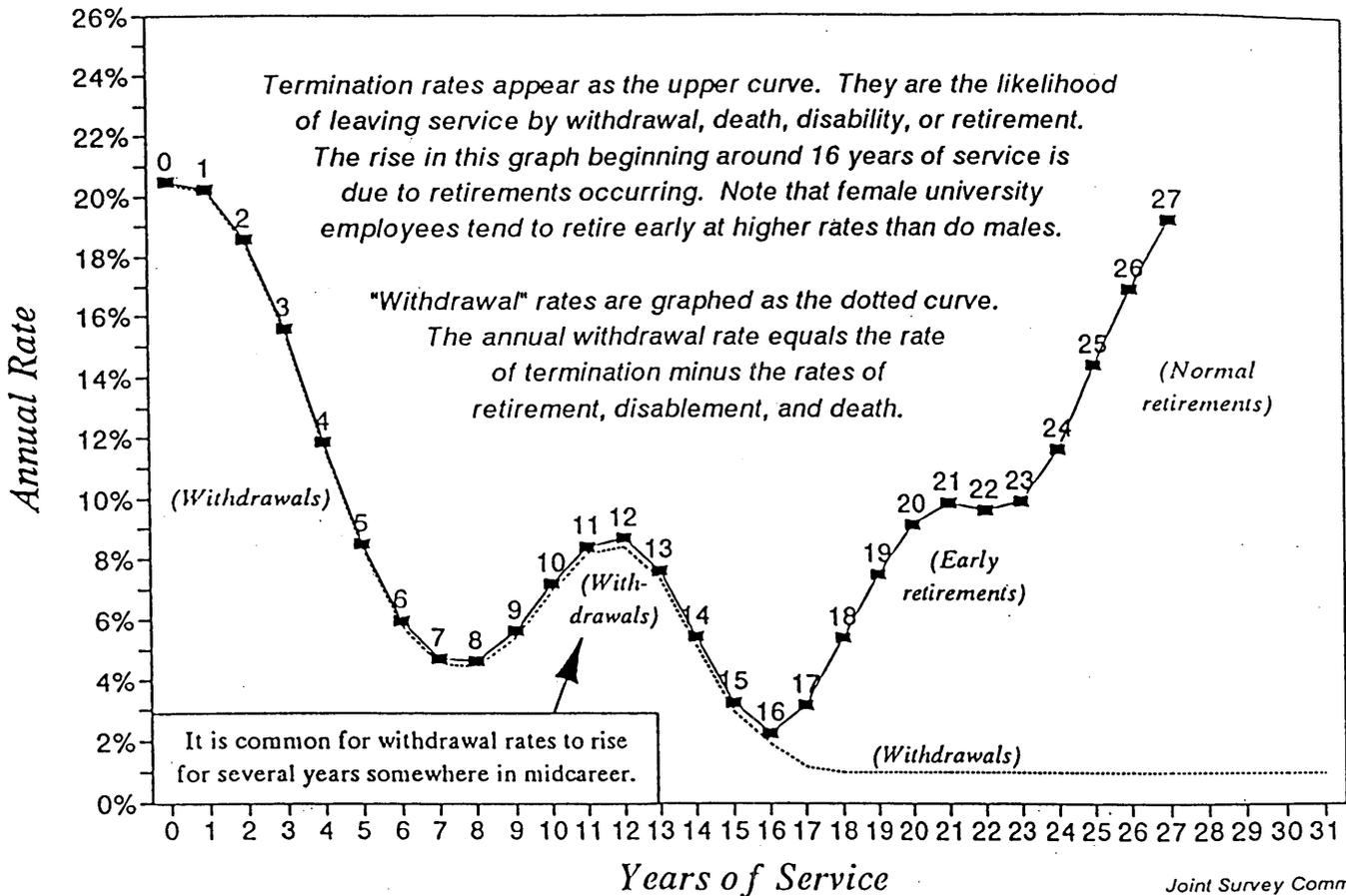


Figure 3

## Service-Based Termination Rates (Example: Female Academic Staff)



## ENDNOTES

<sup>1</sup> The actuarial studies from which data for this report are drawn provide good explanations of the WRS and ORP (see, for instance, pages 38 and 39). For a thorough recent discussion of alternative pension plan forms, see G. E. Cole, "An Explanation of Pension Plans," *Employee Benefits Journal*, June 1999, pp. 3-13. See also G. Kleinman, A. Anandarajan, & K. Lawrence, "Defined Contribution Plans and Pension Planning: An Empirical Analysis," *Journal of Pension Planning and Compliance*, Winter 1999, pp. 32-48.

<sup>2</sup> These reports are "Wisconsin Retirement System Supplemental Actuarial Valuations of Enhancements to Hybrid Plan Features of the Wisconsin Retirement System and a Separate Optional Retirement System for University of Wisconsin Employees," prepared by Gabriel, Roeder, Smith & Company and released on December 21, 1998; and "A Supplemental Actuarial Study of Proposals to Provide an Optional Retirement Plan for University of Wisconsin Faculty and Academic Staff," prepared by Scott Dennison, Director of Retirement Research, on behalf of the Joint Survey Committee on Retirement Systems and the Retirement Research Committee, and released on February 7, 1999. The former is referred to as the GRS report and the latter as the Supplemental Report.

<sup>3</sup> All comparisons refer to the current version of the WRS. The actuarial reports also discuss six alternative ways that the WRS money purchase rate might be increased. In general, the comparisons of the WRS and ORP would yield similar conclusions for the various alternatives, though the magnitude of difference between yields of the WRS and ORP would be reduced relative to calculations using the current WRS.

<sup>4</sup> Supplemental Report, pp. 66 & 67.

<sup>5</sup> Figures 1 and 2 are drawn from pages 6 and 5, respectively, of the Supplemental Report.

<sup>6</sup> Figure 3 is drawn from page 92 of the Supplemental Report.

<sup>7</sup> Supplemental Report, p. 84.

<sup>8</sup> The figures reported in this section are based on Supplemental Report, pages 23 & 31.

<sup>9</sup> E. P. Gunn, "How to Maximize Your Pension Payment," *Fortune*, October 28, 1996, p. 233+.

<sup>10</sup> M. Phipps, "Power to the People: Options, Access and Advice are Helping Employees Become Powerful Investors Through Their Defined Contribution Plans," *Financial Planning*, July 1, 1999.

<sup>11</sup> H. Stucker, "Young Execs Have Different Ideas About Benefits, Experts Say," *National Underwriter*, June 21, 1999, pp. 13, 17.

<sup>12</sup> B. Leonard, "DOL Pension Campaign Targets Women's Retirement Benefits," *HR Magazine*, September 1996, p. 41. The Pension and Welfare Benefits Administration offers a booklet titled "Women and Pensions: What Women Need to Know and Do."

<sup>13</sup> J. Laabs, "Clinton Proposes Law Changes to Make Pensions More Women-Friendly," *Workforce*, January 1999; p. 20.

<sup>14</sup> Supplemental Report, p. 1. For experiences of other universities with alternative plans, see R. Darby, "New Menu for Public Pension Plans," *Government Finance Review*, December 1995, pp. 43-45; and, R.L. Clark & M. M. Pitts, "Faculty Choice of a Pension Plan: Defined Benefit Versus Defined Contribution," *Industrial Relations*, January 1999, pp. 18-45.

<sup>15</sup> *Employee Benefit Plan Review*, March 1999, p. 52.

<sup>16</sup> M. C. Murray, "Global Shift to Defined Contribution Plans Found," *National Underwriter*, May 10, 1999, p. 17.

~~deferred contribution plan~~  
optional contribution

O.R.P. - in certain cases  
Improvements to existing

- ① disincentive - to participate in No. 1 plan -
- ② limit to U.W. faculty "reflex shot problem"

**A Supplemental Actuarial Study of  
Proposals to Provide an Optional Retirement Plan for  
University of Wisconsin Faculty and Academic Staff**

\* \* \* \* \*

Prepared for the Joint Survey Committee on Retirement Systems,  
the  
University of Wisconsin System Board of Regents,  
and the  
Retirement Research Committee  
by the  
Director of Retirement Research

March 22, 1999

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# Overview

## Overview and Discussion

**Original Study:** This study supplements an earlier study by actuaries at Gabriel, Roeder, Smith & Company (GRS) concerning proposals for the possible creation of a "University of Wisconsin Optional Retirement System" (UWORS), that they prepared for the Joint Survey Committee on Retirement Systems. The GRS report is dated December 21, 1998.

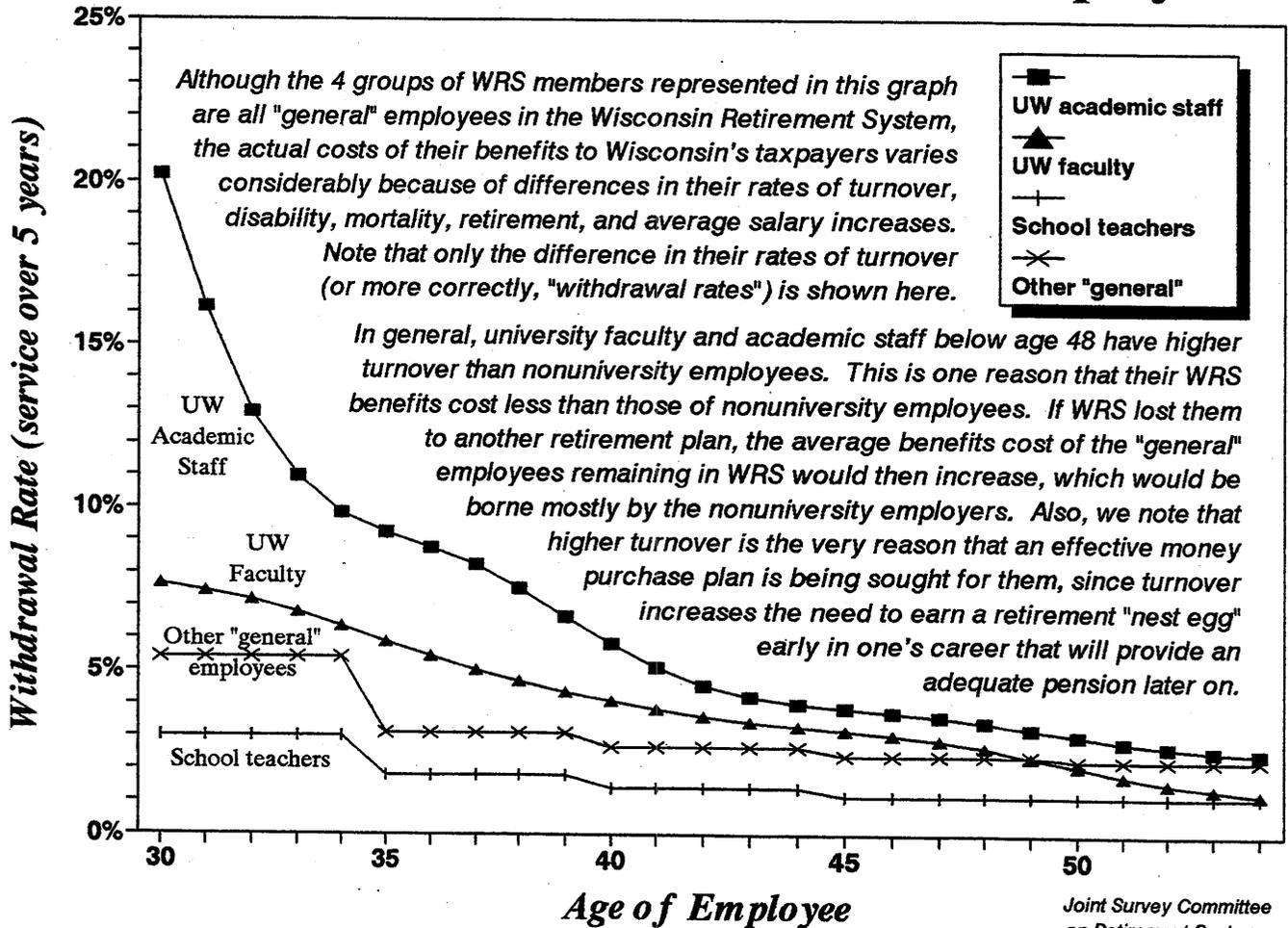
**Prior Version of This Study:** Pages 42 through 104 of this report are identical with the correspondingly numbered pages in the author's earlier "Supplemental Actuarial Study", dated February 7, 1999. The first 41 pages of this report, however, are revisions of the corresponding pages of the earlier report. This revision was necessary in order to correct a formula error discovered in the benefit projection tables of the February report, to produce a more easily understood report than was possible in the short time made available to prepare the February report, and to introduce new "Alternatives 3a through 3d" in replacement of four of the GRS report's "alternatives" that were found to be impractical (for reasons described on page 13).

**Corrections to Some GRS Results:** Cost estimates on pages 5 through 8 of the GRS report were based on a database of recent university employees with over ten years of service at the end of 1997. In contrast, this and the preceding supplemental study use a model of the University of Wisconsin's future employee population developed from 1997 valuation data records of employees hired more recently. Mean ages at hire in the GRS database were from four to eight years less for faculty males, faculty females, academic staff males, and academic staff females than those used in the database for this and the February study. Although the GRS cost estimates for an optional retirement plan are close to those in the supplemental reports, costs shown on pages 5 through 8 of the GRS report should be replaced by estimates in this report. The GRS cost estimates for "Alternatives 1a through 2c", which are amendments to the existing WRS offered as alternatives to an ORP, were not affected by database problems and are reliable. These GRS estimates were, in fact, used as the basis for many of the cost estimates presented for the first time in this present report.

All other information in the Gabriel, Roeder, Smith report appears to be accurate, except for slightly underreported UW payroll (as explained in the "*Population and Payroll*" section of this report). In particular, the GRS report provides excellent explanations of the optional retirement plan (ORP) originally proposed in 1997 Assembly Bill 331 and, as alternatives to this, of some possible improvements to the Wisconsin Retirement System (WRS) that could be used instead of an ORP to meet certain needs of the University of Wisconsin System and its employees, and possibly of other Wisconsin public employees as well. Readers of this report are assumed to have a copy of the GRS report, so much of the information in the GRS report is not repeated in this report.

**Background:** The Wisconsin Retirement System is a "hybrid" retirement plan, basing its members' pensions on the greater of two benefits: one determined by a "defined benefit" formula and the other determined by a money purchase plan that is part of the WRS. However, in 1981 the legislature increased the defined benefit formula, and to help pay for this the WRS money purchase plan was greatly weakened by reducing the rate at which members' money purchase accounts grow within the WRS. The rate for post-1981 employees was set at that time to 5%, which makes the WRS a very noncompetitive money purchase plan in today's world.

# Withdrawal for WRS "General" Employees

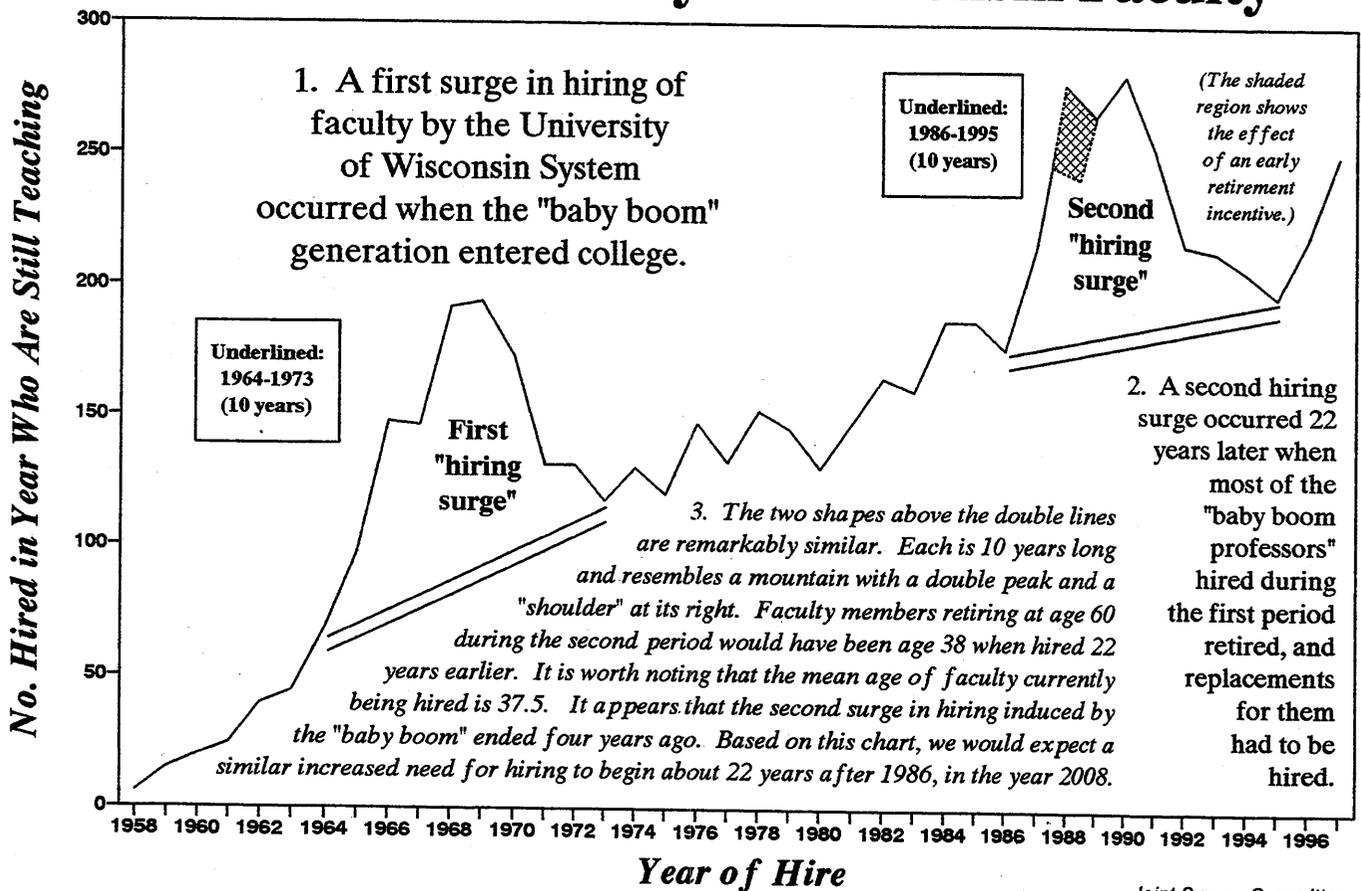


Needs of university employees, as well as of employees in general, for "portable" pension benefits are well served by money purchase or other defined contribution plans. It is not surprising, therefore, that many other states provide their state university employees with defined contribution plans. In many cases this is a money purchase plan placed with a large insurance company. The "standard ORP" (meaning the optional plan set forth in 1997 A.B. 331) examined in the GRS report is similar to that offered by many other states.

The optional retirement plan studied in this present report contemplates a contribution of 10% of employees' salaries. This is a somewhat simplified version of the ORP offered in A.B. 331. Several reasons for recommending this as a more practical ORP are explained on page 12.

**"Alternatives":** Besides studying the "standard ORP", the GRS report also discussed some alternative "fixes" to the WRS that might serve the same purpose as the standard ORP. These involved two things: (i) liberalizing the death benefit offered under WRS and (ii) increasing in one way or another the rate at which members' money purchase accounts grow within the WRS. The GRS report suggested six possible ways that the WRS money purchase rate might be increased. Two of these original six "alternatives" have been retained in this report, and four new "alternatives" are presented here as well. (See "Table P" on page 13 for a summary of all "Alternatives".)

# Past and Likely Future Hiring Patterns for the University of Wisconsin Faculty



Joint Survey Committee on Retirement Systems

**Costs of the Proposals:** Costs of the ORP and the six "Alternatives" are too complex to be done justice by a simple summary. Please refer to Tables 1 - 3 (pages 20 - 22) for the costs, and to page 19 and the tables' footnotes to learn what the costs mean. Because an ORP's population matures over a 30 to 40 year period, the costs of an ORP are not simple to understand. In fact, as the explanation of the graph on page 2 explains, ORP "costs" are not (for a 10%-of-pay ORP, at least) costs of additional benefits conferred, but are amounts of subsidy by the UW to the WRS lost to the other WRS employers, because of a "depooling effect". This results in a rising *share* of the retirement system's costs borne by the other employers, perceived by them as additional cost. This is discussed on page 19. Costs of an ORP are also impossible to estimate very reliably, because we lack data to reliably predict how many new employees would select the ORP at different hire ages.

Costs of the "Alternatives" are complicated by three things: (i) influence that the high Transaction Amortization Account would have on the rate of return to be credited to WRS money purchase accounts under the "Alternatives", (ii) the eventual reduction of the T.A.A., and (iii) the fact that these measures are being contemplated on a prospective basis only (no corrections to be made to money purchase accounts for years between 1981 and now). The costs would tend to increase somewhat until about 15 years had passed, as explained in the footnotes to Table 2.

**Death Benefit:** The change to the WRS death benefit that was proposed on page 10 of the GRS report as part of the "alternative" WRS amendments could be made with or without amending the retirement system's money purchase accrual rules, and with or without establishing an optional retirement plan. The WRS death benefits, although considerably improved in 1997 by lowering eligibility for a spousal annuity by five years of age, is still far below federal standards for private plans. In the author's opinion, adopting the death benefit changes suggested by GRS in their report is good public policy and should be considered with or without any other pension legislation. The cost of this improvement to WRS is given for the WRS membership groups on pages 11 and 12 of the GRS report. For the UW faculty and academic staff (present or future), the cost would be about 0.02% of payroll.

**"Optional" versus Universal Amendment:** If any of the "alternatives" or something similar were adopted as an amendment to the WRS, it could obviously be given universally to all members of the benefited group(s) as a simple plan improvement. Or, by offering it optionally to one or more groups, and requiring those electing it to pick up a share of the cost, it could be presented as a true "optional plan". If the employee would have to pick up half of the cost for any "alternative", this would increase the member's contributions, which would in turn increase the money purchase account, thus increasing retirements themselves. GRS has estimated that going this route would increase the costs of any "alternative" *for those electing it* by about 15%. However, by some not electing it there would be some offsetting cost savings (as compared with giving it universally), which has not yet been estimated. All costs for "alternatives" noted in the GRS report and both supplemental reports are based on the "alternatives" as universal amendments, on a prospective-only basis (i.e., no back adjustment of money purchase accounts would be made for years since 1981), with the employer paying the full cost.

**Administration Considerations:** If any of the "alternative" proposals or similar were adopted as a universal amendment, no additional administration would be necessary for the WRS. If such were adopted on an elective basis, there would be some administration necessary to guide the new member in making an election, and then recording the decision -- after that, there would be no additional administration required.

In the case of an optional retirement plan, day to day administration would undoubtedly be handled by the insurance carrier selected for the plan, and by University of Wisconsin System Administration. There are two aspects of this plan's unique situation that would require additional administration on the part of UWSA and the WRS actuary, if not the Department of Employee Trust Funds as well:

1. If the contribution to the ORP were made variable, as in A.B. 331, then the actuary would have to perform a valuation of the ORP membership group each year to determine what the group's cost would be if still in the WRS. This would involve doing experience studies for the group as well as valuations, with all the recordkeeping necessary to support those activities.
2. If it is deemed necessary for the UW System to make an additional "equalization contribution" into the WRS to neutralize the cost shifting effect from "depooling", then similar work by the actuary and the administration that is foundational to that work would be required. (Regarding this, please see my remarks near the end of page 12.)

# The Problem

## "The Problem"

Those who spend the first portion of their careers working as Wisconsin public employees, and those who end their working years as such, need entirely different kinds of retirement plans to provide them with sufficient income after retirement. This should become quite clear through the three examples given on pages 7, 8, and 9, and the graphic illustrations on pages 10 and 11.

At some point the architects of the Wisconsin Retirement System surely realized this, because the WRS is really *two* retirement plans working together -- a "money purchase plan" of the type that best meets the needs of those who work here early in life and then leave, and a defined benefit (or "formula") plan whose benefit formula best serves those who arrive here in early or midcareer and then stay at their jobs until they retire.

These two retirement plans work together to cover all of the state's public employees' retirement needs in a reasonable and affordable manner -- or at least, they are supposed to work together. The problem is that one of the plans, the "money purchase plan", was hamstrung by 1981 legislation as a way to help pay for improving the other plan's benefit formula. Today the defined benefit plan is alive and robust, but the money purchase plan is languishing -- figuratively having been weakened by a blood transfusion it was forced to give to the other plan.

### Pensions from the WRS

Pensions payable under the Wisconsin Retirement System are always figured as the larger of two amounts: A "formula" amount determined under the defined benefit or "formula" plan, and the amount of pension that can be purchased by the amount of money accumulated in the retiring employee's money purchase plan account.

The "general" category of employees, comprising over 92% of all WRS members, includes as its two largest groups all public school teachers and University of Wisconsin System personnel. For "generals", the defined benefit formula is 1.6% of the highest three years' average earnings *times* the years of service credited under the WRS.

The money purchase plan receives contributions equal to 10% of members' salaries, accumulated in accounts for the individual members at some rate of interest defined by law. That rate of interest used to equal the actual rate of return experienced by the WRS trust fund each year, but 1981 pension legislation that increased the benefit formula to its current 1.6% factor also sought to pay for this by reducing the money purchase interest rate to a flat 5% annually.

### What Happens When an Employee Leaves Service

This effectively crippled the defined contribution plan. Generally, for younger employees who leave employment after several years, the "formula" amount of pension is frozen at their time of their departure (see pages 7 and 8 for some pictures of this). The money purchase account, however, continues to grow at the legally defined rate of interest (or "investment earnings") until one day the ex-employee decides to retire. Then the money purchase account's value is used to purchase an annuity, or pension -- hence the name "money purchase" plan.

For example, the employee pictured in the graphs on pages 7 and 8 would have a money purchase account of \$16,855 at age 40, when he or she would leave public service in Wisconsin. At 5% compounded annually, this becomes \$57,078 by age 65. From the table of money purchase

rates below, we see that under the WRS money purchase plan, this sum will buy an annual pension of 57.078 *times* \$84.27 (since \$57,078 is 57.078 "thousands"), or \$4,810 annually. Since this is greater than the \$2,705 annual pension that the "1.6% formula" produced at age 40, so the WRS would pay this retiree a pension of \$4,810 annually.

In our example, if the WRS credited 8% instead of 5% interest to its money purchase accounts, then the employee's account at age 40 would have been \$19,125, which by age 65 would have grown to \$130,978 -- enough to buy an \$11,037 annual pension from WRS. What a difference!

If the same employee had been in an insurance company's money purchase plan, with the same 10%-of-salary contributions made into that plan, and with 8% interest credited to the account, then at age 40 the account would be about \$19,890 because of more frequent crediting of the 8% interest during each year. By age 65 that would have grown to \$136,217, which at CREF's rate, anyway, would purchase a pension of 136.217 *times* \$78.73, or \$10,724 annually.

The "problem" should now be obvious -- the Wisconsin Retirement System with its 5% money purchase "crediting rate" simply doesn't produce anywhere near the pension that modern money purchase plans do. It is too anemic to meet the needs of the University of Wisconsin, or for that matter, of anyone else working in public service, for a truly "portable" pension.

The remaining pages of this section will define the problem in greater depth, with pictures.

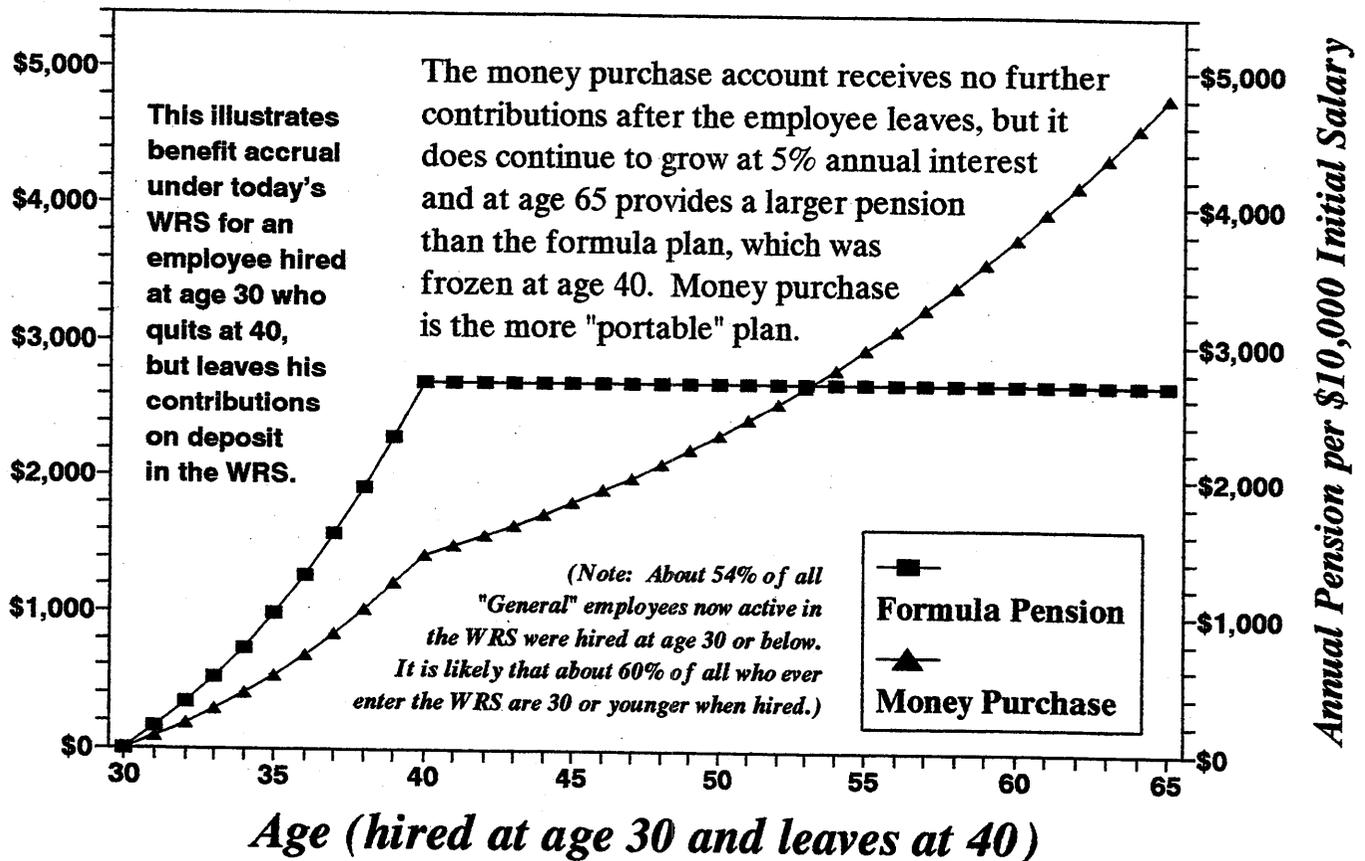
*Young academic staff*  
**Sample Money Purchase Rates  
 For Retirement Ages 55 Through 65**

Retirement Age	Annual pension per \$1,000 in Money Purchase Account		Ratio of pension per \$1K, WRS to "CREF"
	WRS	"CREF"	
55	\$68.12	\$66.05	103.1%
56	69.27	66.98	103.4%
57	70.49	67.97	103.7%
58	71.81	69.02	104.0%
59	73.23	70.15	104.4%
60	74.75	71.34	104.8%
61	76.38	72.62	105.2%
62	78.13	74.00	105.6%
63	80.03	75.47	106.0%
64	82.07	77.04	106.5%
65	84.27	78.73	107.0%

(See page 25 for the "CREF" basis used.)

"CREF" referenced above is the "College Retirement Equity Fund", a leading insurer providing variable annuities to educators and others. This table illustrates that different money purchase plans (e.g., WRS and CREF) usually use different "money purchase rates". (Note that these are not CREF's actual rates, but are translations of CREF's rates to an underlying interest rate basis that is the same as WRS uses, for the sake of making fair comparisons.)

# Example 1: WRS Pension for an Employee Who Works for 10 Years EARLY in Career



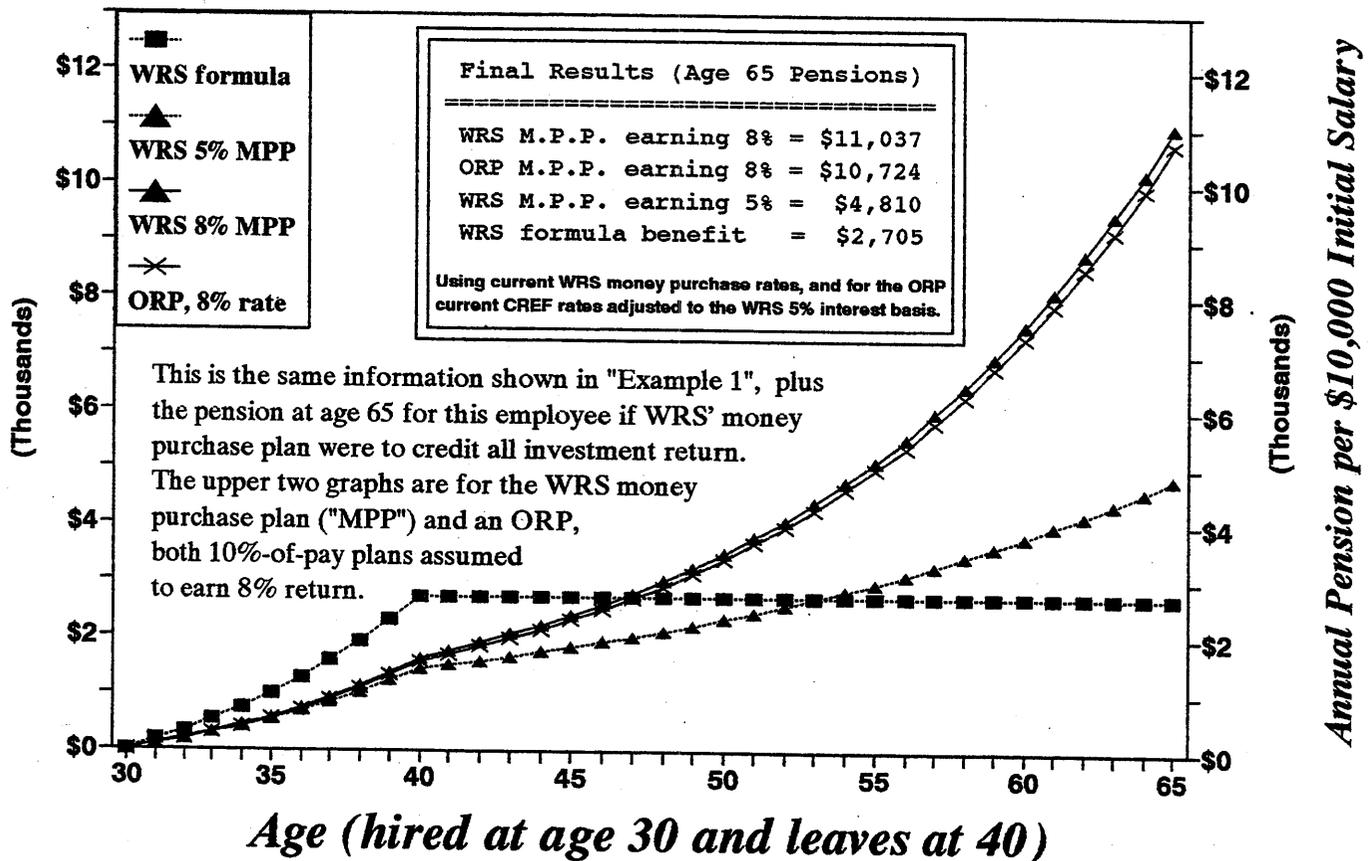
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This shows why money purchase plans are more "portable" than "formula" (or "defined benefit") plans. One's money purchase account from a previous job keeps on growing into a much larger pension than can be provided by a benefit formula that was "frozen in time" when one left that job.

About 60% of all WRS "general" members are age 30 or younger when hired, while only 16% of UW System faculty members are. About 75% of all "general" employees are 35 or younger when hired, and approximately 46% of UWS faculty members are. There is a very good chance that such a young employee will not stay at his or her Wisconsin public service job until retirement. If so, then the money purchase plan is for that employee by far the more important of the Wisconsin Retirement System's two plans. This is obvious from the graph.

Most states do not have both a money purchase and a defined benefit ("formula") plan working together in their retirement systems. For them, the only way to provide portable pensions for their younger employees who leave has been to establish a money purchase or similar defined contribution plan outside of their regular defined benefit retirement system. Wisconsin, however, does have a two-for-one retirement system. But half of it is not doing very well -- see the next page.

## Example 2: WRS, ORP Pensions for Those Who Work for 10 Years EARLY in Career



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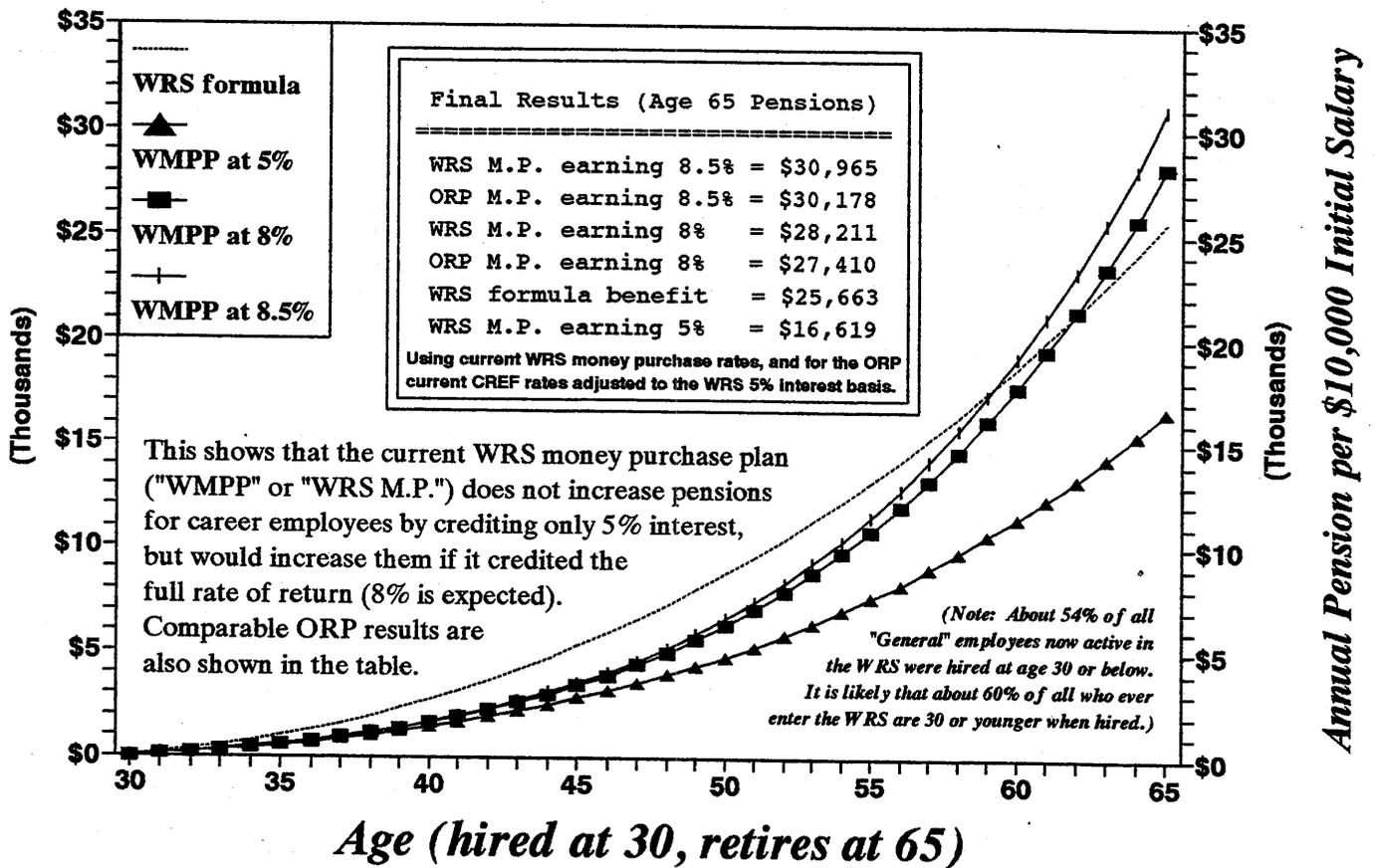
Employees typically have a total of about 35 years to work somewhere and earn pension benefits, counting from age 30 to 65. Those in this example work their first 10 years as Wisconsin public employees, and then take other jobs. How "fair" to them is each of these four retirement plans?

Here is a good way to analyze the fairness of these plans -- or their "portability", if you will. The employee spends 10/35ths of a full career here. If he/she stayed here, the WRS formula benefit at age 65 (a fair benefit for 35 years of service) would be about \$25,663 annually. 10/35ths of this is \$7,332 -- which is therefore a fair pension for 10 years of service, by Wisconsin standards.

- The WRS formula benefit plan would pay a \$2,705 pension -- *only 37% of what is "fair"!*
- The WRS 5% money purchase plan would give a \$4,810 pension -- *only 66% of what is "fair"!*
- The WRS money purchase plan giving a full rate of return (expected to be 8%) would provide \$11,037 -- 151% of "fair". The employee would certainly agree that was "fair"!
- An "outside" ORP money purchase plan (figured at 8%) would pay \$10,724 -- 146% of "fair". This is close to what the WRS would pay if it credited 8% earnings, and is more than "fair".

*If you do not intend to work here until you retire, all pension plans are not created equal.*

## Example 3: Projected WRS Pensions for Those Who Retire after a Full Career

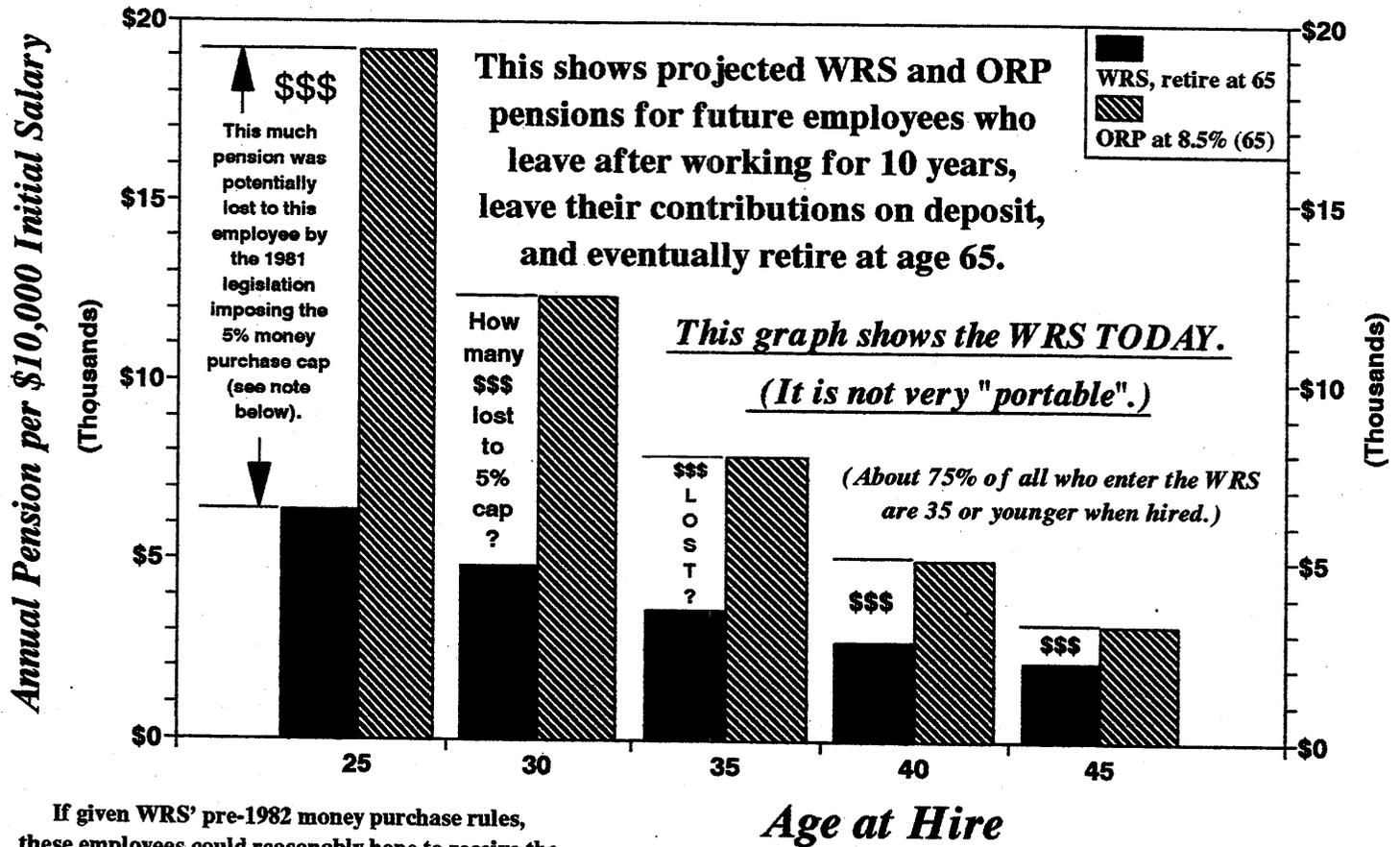


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### Some Observations

1. No career employee hired at any age after 1981 will be getting a bigger pension because of the WRS money purchase plan -- unless the current 5% crediting rate is increased.
2. About 75% of WRS "General" members are hired at age 35 or younger, so if the WRS money purchase plan crediting were restored to something like its pre-1982 level, the likelihood of higher pensions is something that the majority of future WRS members could look forward to.
3. The increase in many employees' pensions over what the "Formula Plan" would have given them could easily be as much as last year's "Benefits Bill" sought to provide (an additional 0.2% in the formula multiplier applying to past service).
4. The WRS charges less for money purchase pensions than one of the nation's leading variable annuity insurance companies. (See the table comparing annuity prices on page 6.)
5. The graph illustrates an 8.5% rate of return. 1/2% above the 8% rate that ETF's Board, SWIB, and the actuary conservatively anticipate WRS will earn is not too much to hope for.

# Projected Pensions for Those Employees WHO LEAVE after 10 Years of Service



If given WRS' pre-1982 money purchase rules, these employees could reasonably hope to receive the larger of the WRS and "8.5% ORP" benefits shown here.

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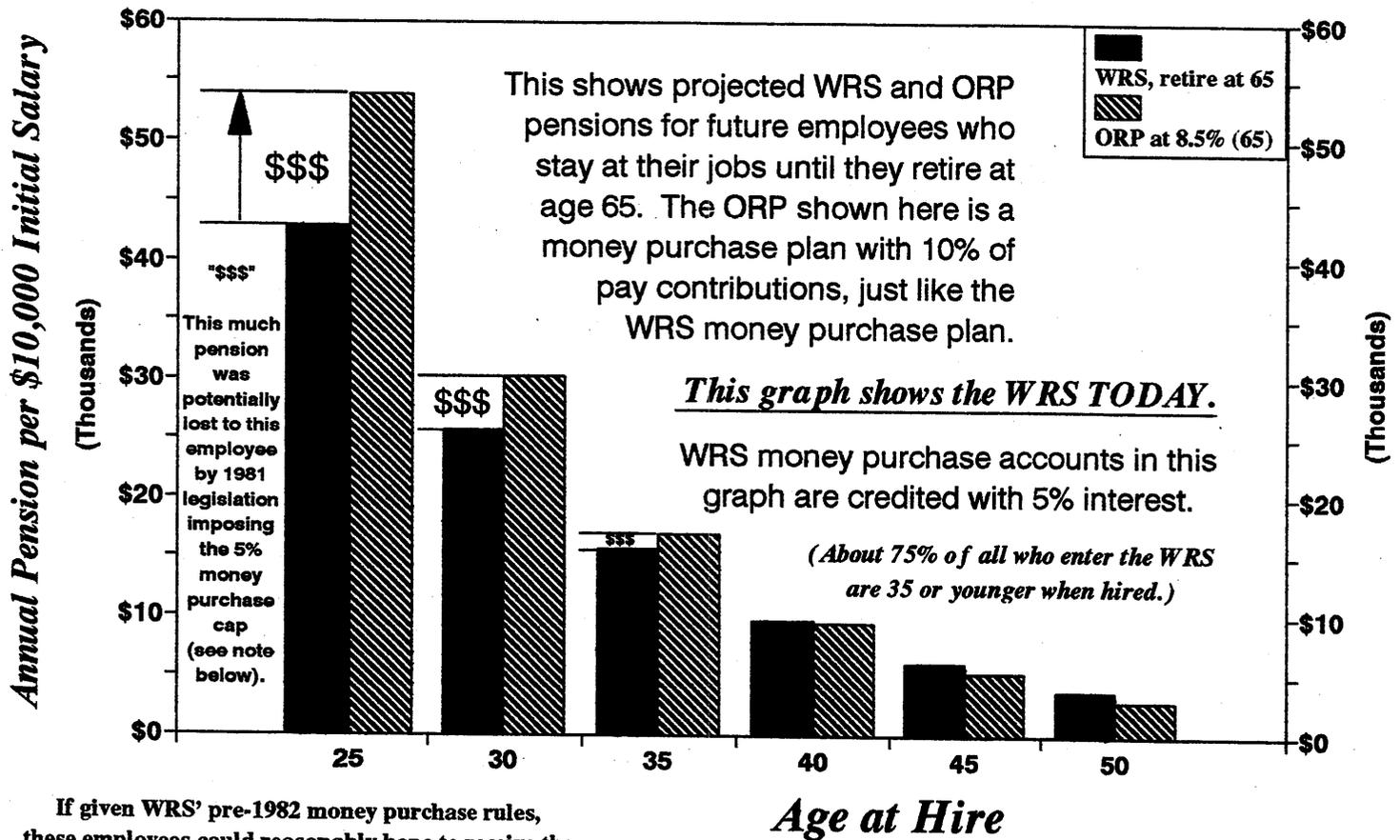
This graph shows the amount of projected annual pension (per each \$10,000 of first year salary) for future "General" employees who work for 10 years, leave, and eventually retire at age 65 ...

1. Under WRS as it is today, with a crippled 5% money purchase plan, and
2. Under a money purchase plan receiving the same rate of contributions as WRS uses, which is 10% of salary, but crediting an average 8.5% annual rate of return on contributions.

An 8% interest rate assumption used for WRS valuations means that the WRS actuary and board of trustees believe that the retirement system expects to average at least an 8% average return in the future. So an 8.5% assumption is fair to use in this illustration for a good money purchase plan -- because that is the average rate that the WRS money purchase plan could probably credit, and it is a rate that an optional retirement plan with a large insurance company could probably sustain.

The ORP benefits in this graph are a benchmark for "portable" pensions for employees who only spend 10 early years of their careers in Wisconsin public work. By this measure, their pensions under the current WRS will be 67% substandard if hired at age 25, 61% below par if hired at 30, 54% if hired at 35, 46% if hired at age 40, and 32% substandard for those hired at age 45.

# Projected Pensions for Those Employees WHO STAY in Service until Retirement



If given WRS' pre-1982 money purchase rules, these employees could reasonably hope to receive the larger of the WRS and "8.5% ORP" benefits shown here.

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This graph shows the amount of projected annual pension (per each \$10,000 of first year salary) for future "General" employees who work until they retire at age 65 ...

1. Under WRS as it is today, with a weakened 5% money purchase plan, and
2. Under a money purchase plan receiving the same rate of contributions as WRS uses, which is 10% of salary, but crediting an average 8.5% annual rate of return on contributions.

The interest rate assumption used for WRS valuations is 8%, indicating that the WRS board of trustees and its actuary believe that the retirement system expects to earn *at least an 8% average rate of return* over the long term. Therefore, it is not unreasonable to expect a bit more than 8% in the future, and the 8.5% assumption used in this illustration is something we can reasonably hope for. If the WRS money purchase plan's interest crediting rules were restored to something like their pre-1982 level, then WRS members could indeed hope for a pension on retiring at age 65 that is pictured in this bar graph as the *higher* of the two bars above his or her hire age.

The gaps labeled "\$\$\$" show how much pension expectation would increase for future employees by restoring the money purchase crediting rate to somewhere near the fund's full rate of return.

# Proposed Solutions

## Proposed Solutions

An obvious solution to the inadequacy of the current Wisconsin Retirement System's money purchase plan, with its low 5% crediting rate, is to restore that rate in some way to make the WRS money purchase benefit effective once again. This could be called the "in house solution".

Another way to solve this situation, at least for the University of Wisconsin System, would be to do what the majority of other states have done: Set up a defined contribution plan for future (or perhaps present and future) employees. Many large insurance companies offer such plans, and they are good, effective defined contribution plans. Many professors around the nation are well pleased with their money purchase plans. This could be called the "outside solution".

It is noteworthy, however, that the great majority of other states who have set up money purchase or similar plans for their university personnel (or other public employees) do not already have a hybrid retirement system like the Wisconsin Retirement System -- meaning a system that includes both a defined benefit (or "formula") plan and a money purchase plan.

Obviously, there are ramifications of the "in house solution". If the WRS money purchase plan is fixed for some university people, there will be an outcry to fix it for all other public employees as well. However, if what was done in 1981 is truly seen as poor public policy, then perhaps the WRS money purchase plan should be set aright for everyone who has been harmed by this. Professors are certainly not alone in their need for "portable pensions". Everyone who works the first part of his or her career at one job, and then moves on to another elsewhere, would benefit by having a vested pension from the first employment that is commensurate in its amount with the time spent at the first job. Healthy money purchase plans do provide this.

The proposed solutions considered in this study to remedy the problems defined in the previous sections of this report are illustrated in the following pages of this section. They are these:

- ◆ Establish as an optional retirement plan ("ORP") a money purchase plan through a large insurance company, offered as an alternative to membership in the WRS, with a contribution level somewhere around 10% of salary. Throughout this report, a contribution level of exactly 10% of salary is assumed and illustrated.
  - This report only considers an ORP offered optionally to future UW System employees.
  - The Entry Age Normal Cost of those UW employees who would be likely to join such an ORP has been estimated at between 9.4% and 9.6% of their payroll. Therefore, giving them ORP contributions in that amount would not create any new net benefit cost for their employer. Since these EANC rates are so close to 10%, and the WRS also has a 10%-of-pay money purchase plan, it seems a good recommendation to use a 10%-of-pay ORP, if one is adopted at all. This would also eliminate the need for actuarial valuations each year to determine the amount of contribution as the amount that would have been the members' benefits cost under the WRS had they remained in that system.
- ◆ Or else solve the problem "in house" by increasing the WRS money purchase crediting rate. Six alternative ways of doing this are suggested on the next page. These, along with a 10%-of-pay ORP, are studied in the following pages of this report, ending with page 41.

Table P. Proposals to Improve WRS Money Purchase Crediting Rates  
Evaluated Using SWIB's 8%/8% Normal Distribution

Alter- native	GRS estimate (all but 1a,2a by Monte Carlo)	Non-Monte Carlo		Percent of Payroll Cost for ...			
		Rate of return by SWIB model	ROR if current TAA not applied	Future UW staff		All WRS "General"	
				Expected cost	No-TAA cost	Expected cost	No-TAA cost
A	B	C	D	E	F	G	H
1a	7.0%	7.00%	6.20%	Rejected: This needs a "floor".			
1b	6.2%	4.70%	4.45%	Rejected: <u>Reduces</u> expected return!			
1c	6.5%	6.12%	6.05%	Rejected: Too small an improvement.			
2a	8.0%	8.00%	7.20%	0.24%	0.13%	0.49%	0.31%
2b	6.7%	5.53%	5.25%	Rejected: Too small an improvement.			
2c	7.0%	6.76%	6.64%	0.11%	0.11%	0.25%	0.24%
3a	(New)	7.88%	7.24%	0.22%	0.14%	0.45%	0.32%
3b	(New)	7.34%	6.76%	0.15%	0.11%	0.33%	0.25%
3c	(New)	7.63%	7.09%	0.18%	0.13%	0.39%	0.29%
3d	(New)	7.96%	7.46%	0.23%	0.16%	0.48%	0.36%

**Abbreviations:** SWIB = State of Wisconsin Investment Board, (New) = New in this report, ROR = Rate of return (on the WRS valuation basis), TAA = Transaction Amortization Account

### Explanation of Column A

Alternatives 1a, 1b, 1c, and 2b, described in the GRS report, were rejected for reasons noted in this table.

Alternative 2a would restore WRS' money purchase crediting rate to the trust fund's full (valuation basis) rate of return, with no cap or floor applied. This was the method used before the 1981 benefits legislation reduced the money purchase crediting rate to a flat 5% effective for those hired 1/1/82 and later.

Alternative 2c credits investment return up to 8%, with a 5% floor. This involves very little risk sharing.

Alternative 3a credits all investment return, less 1%, with a 0% floor. (Note that 0.85% less than the full rate of return coupled with a 0% floor has the full 8% expected rate of return. Therefore, that would cost the same as Alternative 2c, returning to the pre-1982 crediting rule.)

Alternative 3b credits all investment return, less 2%, with a 1% floor.

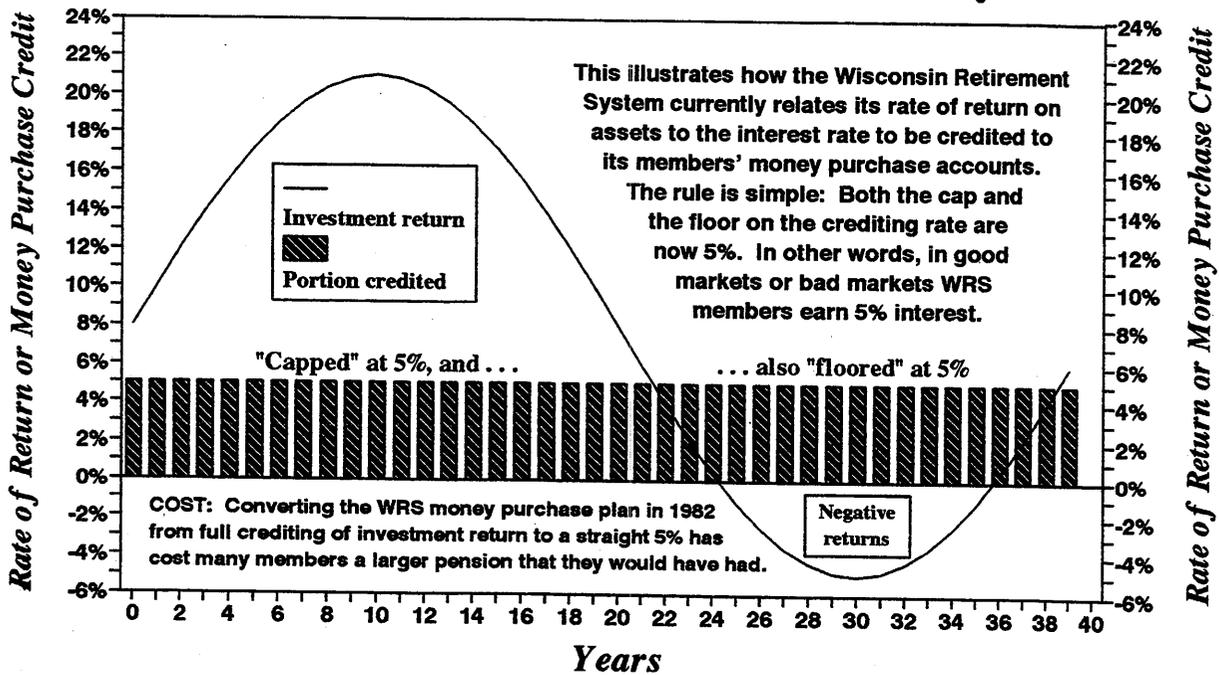
Alternative 3c credits all investment return, less 2%, with a 2% floor.

Alternative 3d credits all investment return, less 2%, with a 3% floor. This has an expected rate of return of 7.96%, just 4 basis points below the model's expected full rate of return. Therefore, this crediting rule is very close in actuarial cost to a return to the pre-1982 rule of full crediting with no guaranteed floor. Alternative 3d can be viewed as "a fair degree of risk sharing with a fair degree of guarantee".

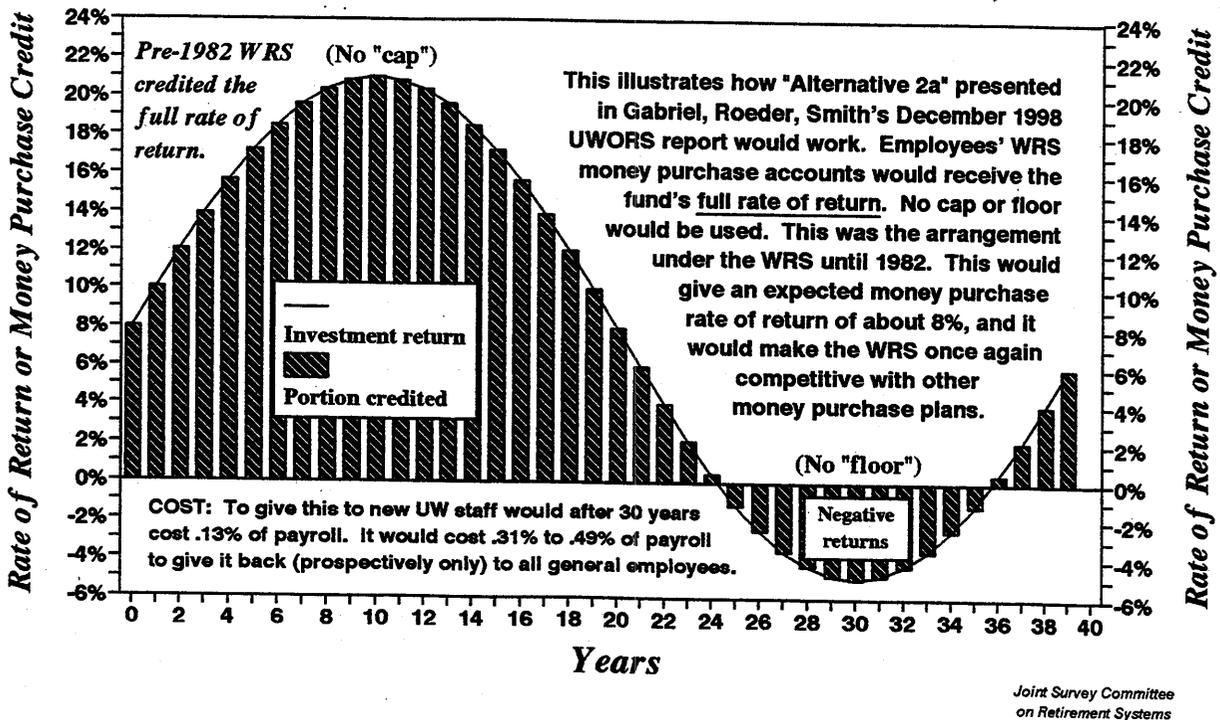
### Explanation of Columns D, F, and H

If for some reason the currently high TAA value were not allowed to increase money purchase crediting rates, then these columns give the expected crediting rate. This could be because of adoption of another asset valuation method, a drop in the stock market, specific legislation to that end, or perhaps for other reasons.

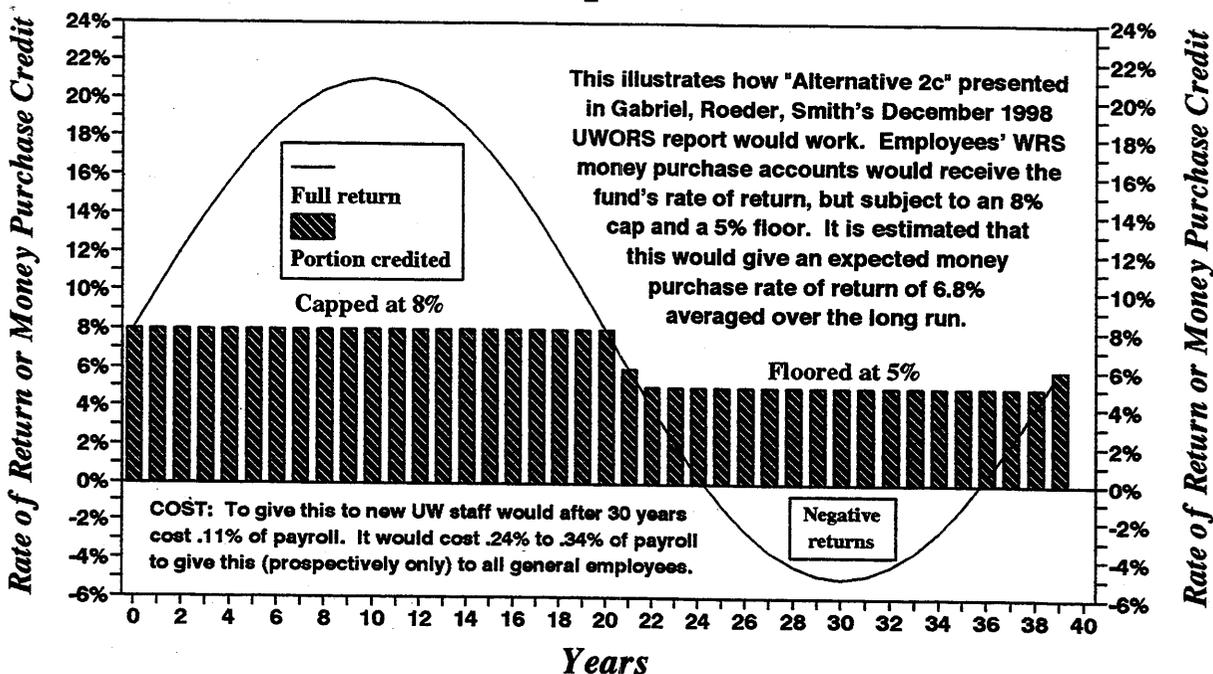
## Money Purchase Crediting Rates Under Today's Wisconsin Retirement System



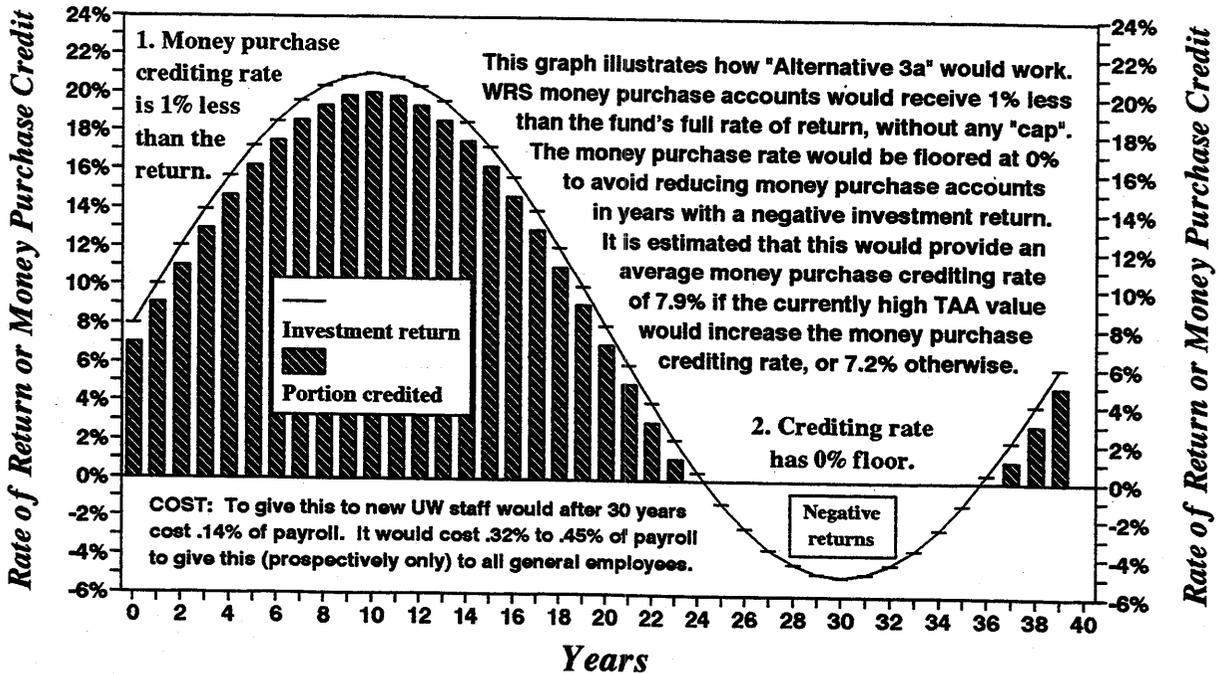
## Money Purchase Crediting under the WRS Prior to 1982 (GRS "Alternative 2a")



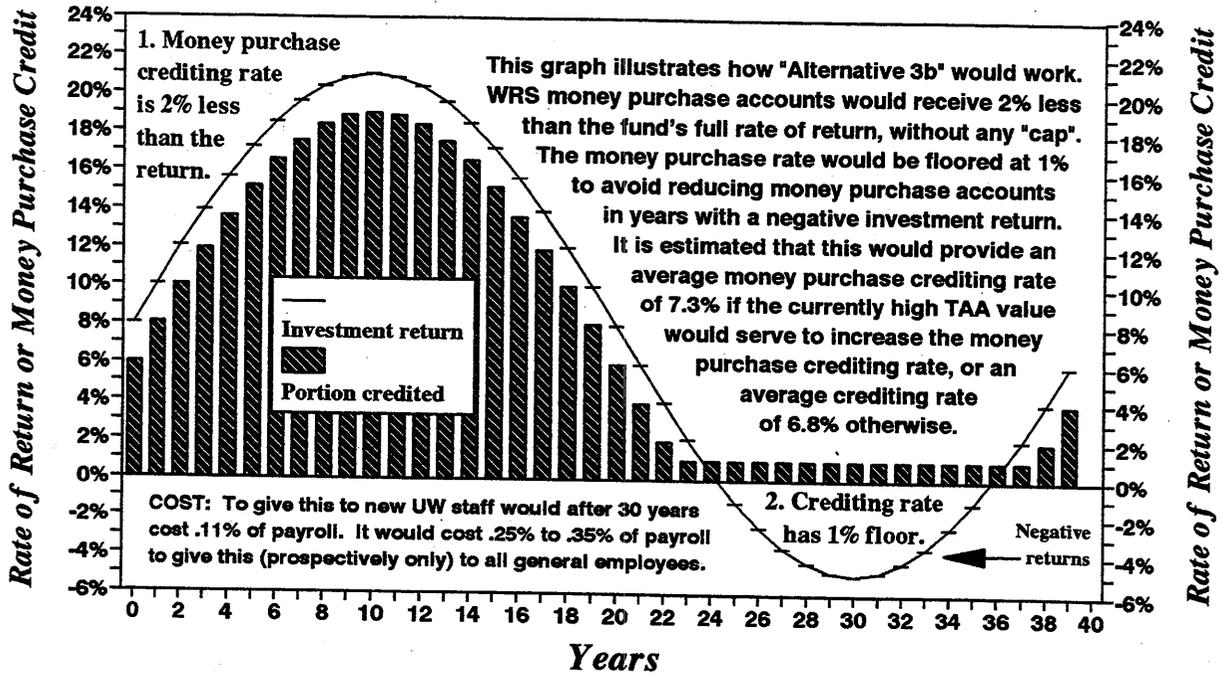
## Money Purchase Crediting Rates Under the GRS Report's "Alternative 2c"



## Money Purchase Crediting Rates Under the Suggested "Alternative 3a"

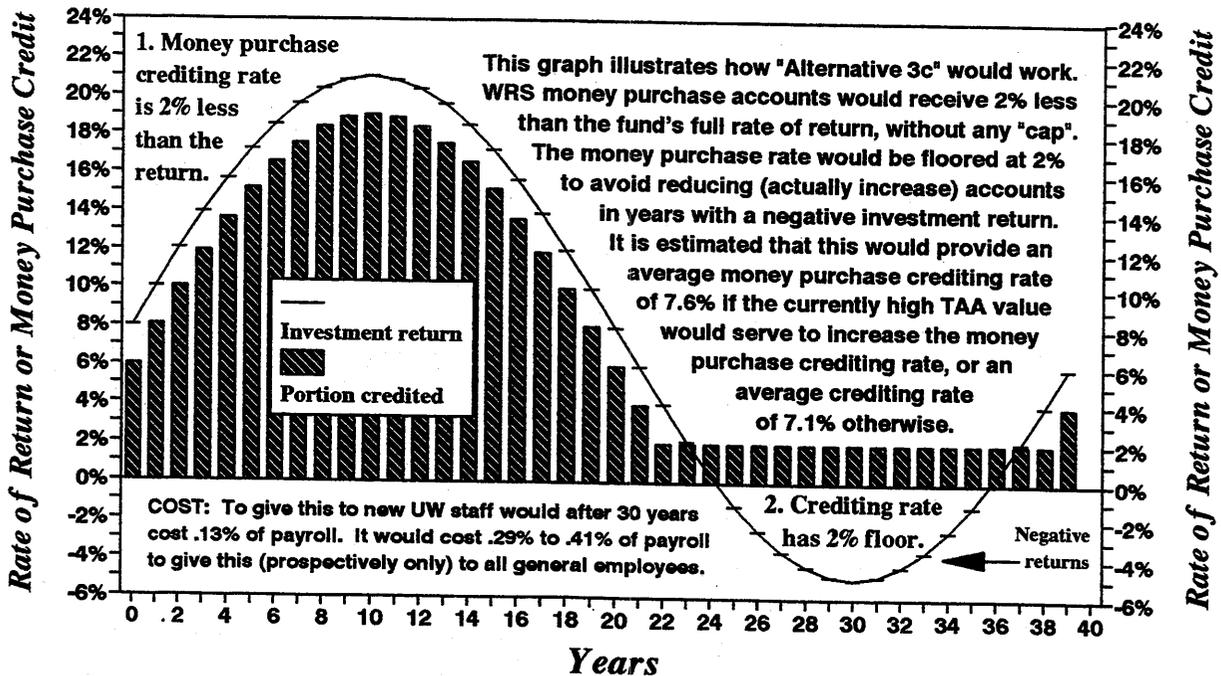


## Money Purchase Crediting Rates Under the Suggested "Alternative 3b"



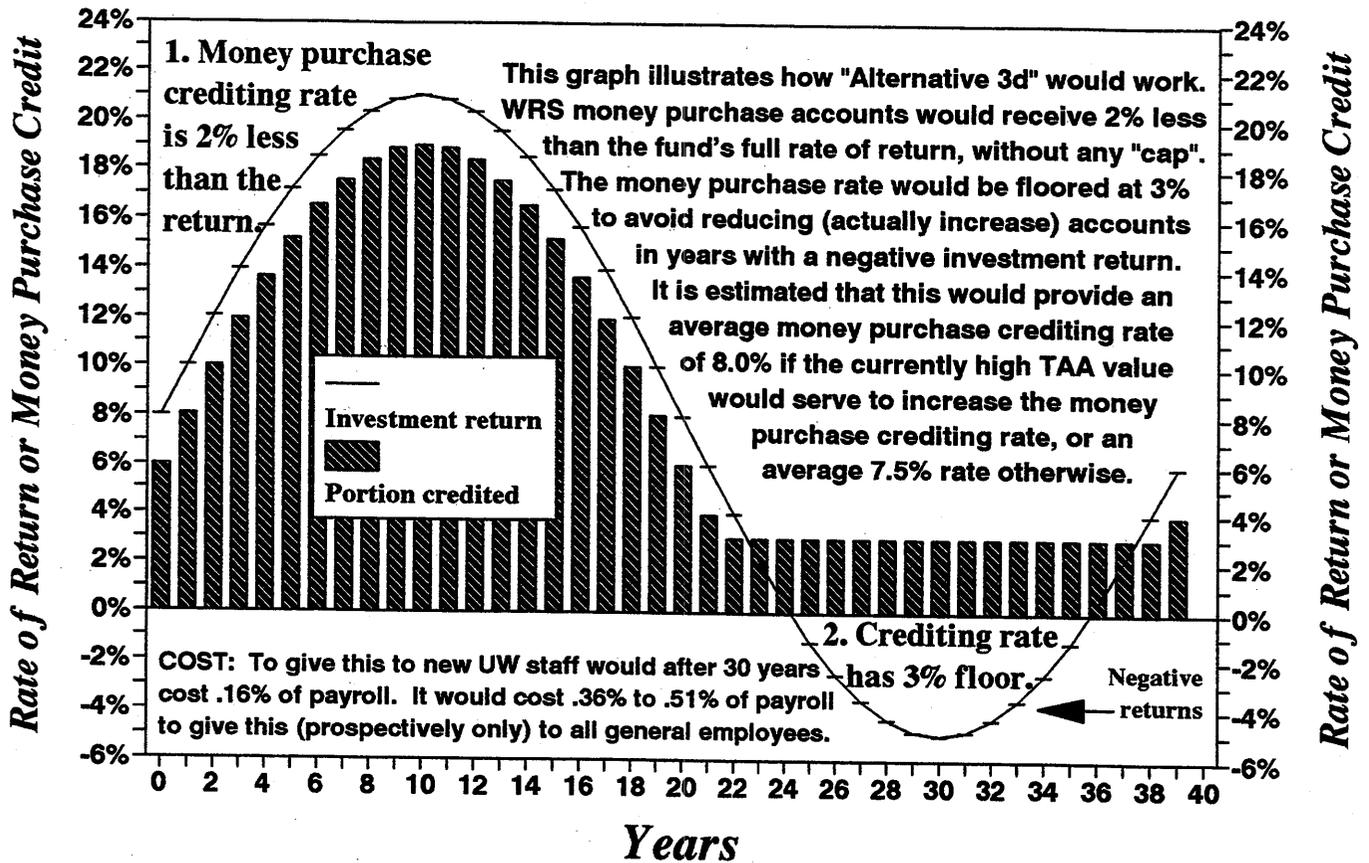
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## Money Purchase Crediting Rates Under the Suggested "Alternative 3c"



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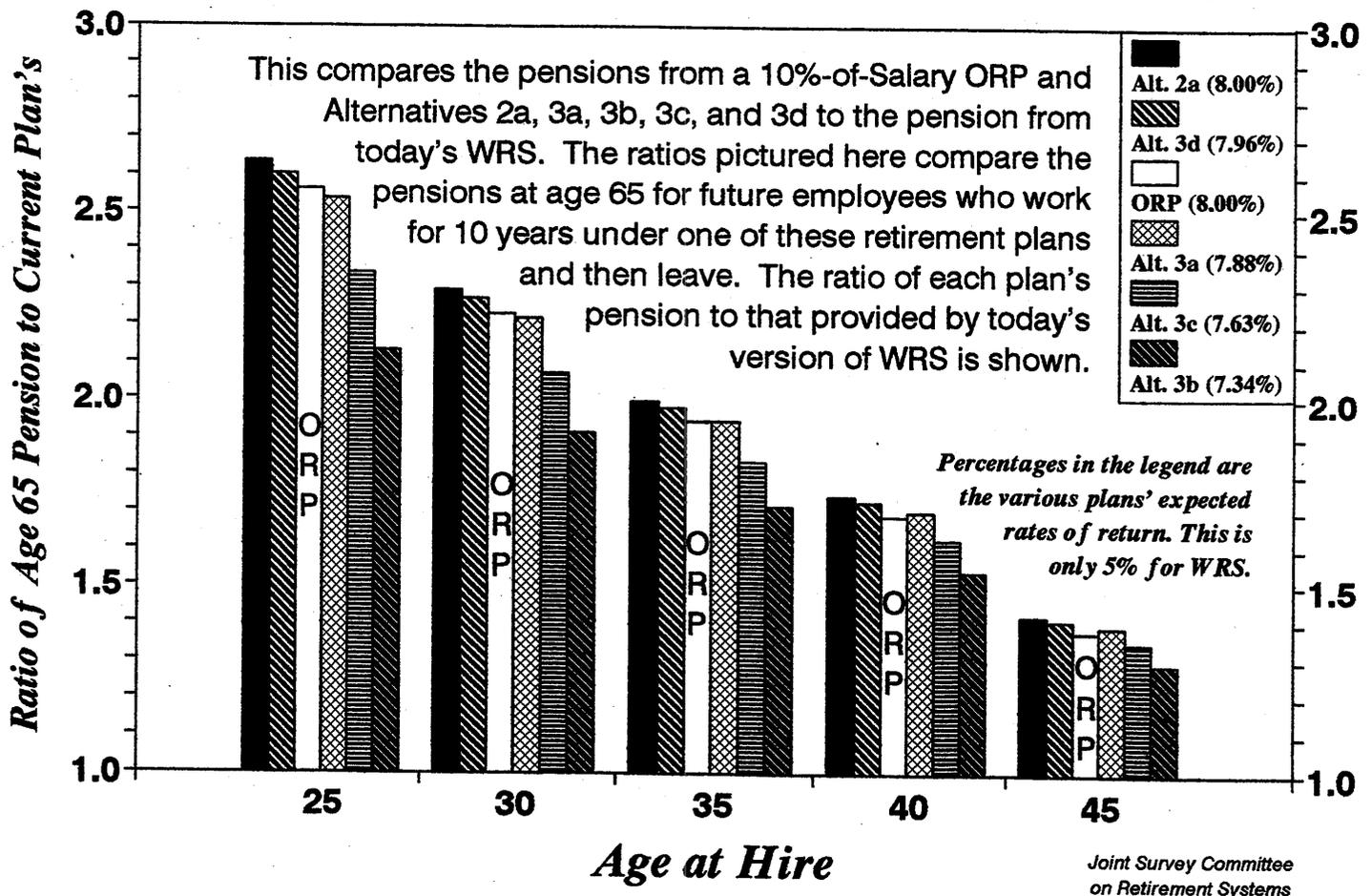
# Money Purchase Crediting Rates Under the Suggested "Alternative 3d"



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1. Page 14 contrasts the current WRS money purchase credit with the pre-1982 credit. Currently, 5% annual interest is credited, which involves no risk at all for the employees -- but gives them a very poor "money purchase plan" (it is more like a savings plan). The pre-1982 rule credited money purchase accounts with the full rate of investment return earned by the WRS, which meant total sharing of investment risk (and also investment rewards) by the employees.
2. Alternative 2c on page 15 would floor the money purchase crediting rate at the current 5%, but allow up to 8% when the fund earned it. This is like a savings plan with a bit of risk added.
3. Alternative 3a on page 15 would guarantee that WRS money purchase accounts would never be reduced in bad years, and would pay for this guarantee by giving the employers the first 1% of return in good years. This would allow employees to share in most of the risk and upside reward, but with a desirable "no loss" guarantee as a safety net for their accounts.
4. Alternatives 3b, 3c, and 3d (on page 16 and above) extend Alternative 3a by raising the guaranteed floor on the crediting rate, giving employers 2% return "off the top" in good years to pay for this. Alternative 3d is a "balanced" blend of a fair amount of risk and reward with a good "safety net" -- its expected performance and cost are very close to those of Alternative 2a.

# "Portability" of 6 Proposed Plans for Those WHO LEAVE after 10 Years of Service



1. Other things being equal, when a Wisconsin public employee works for around 10 years, leaves for another job, and eventually retires at age 65 -- then the retirement plan that would pay that retiree the largest pension could fairly be said to be the "most portable" for him or her.
2. For this graph we have hired six future employees, all at the same salary, at every fifth age 25 through 45, put the six hired at each age into the six retirement plans identified in the graph, and then compared their projected pensions on retirement at age 65. To compare the pensions, we divided each by the pension that would have been paid under today's version of the WRS.
3. For example, for the age 25 hire, "Alternative 2c" (WRS on a pre-1982 basis) scored a ratio of 2.64, meaning that for every \$1.00 in pension that employee would have received from today's WRS, he would receive \$2.64 under Alternative 2c. The 10%-of-salary money purchase ORP scored 2.56 for this employee, indicating that it would pay a relative pension of \$2.56.
4. Although the ORP is an excellent money purchase plan, because of its higher pricing of annuities it appears likely to be "less portable" (in the sense used here) than some versions of the WRS money purchase plan would probably be. Also, we notice that it loses some ground at hire ages over 35, when the WRS "formula pension" begins to perform better for the older hires.

# Costs

## Cost of Proposals

The three tables in this section show the estimated costs of the "optional retirement plan" and of the six "Alternatives" already described in the preceding section of this report.

Costs shown for the six "Alternatives" would truly represent new costs to the WRS, because additional benefits would be created for some WRS members by any of these proposals. In contrast, the "costs" shown for the optional retirement plan represent something other than actual cost. They represent the amount of additional cost to be borne by employers funding the WRS after an optional retirement plan draws some of the UW workforce from the WRS. Therefore, the ORP "cost" estimates shown here are a "shifting of existing cost to others" rather than a true cost. The amount of this shifted cost would depend on how many future employees select the ORP over the WRS, and on their hire ages and salary levels.

Although this study predicts a range of shifted costs, it is possible that if an unexpectedly high percentage of older and low percentage of younger hires would elect an ORP, there could be a cost shifting in favor of the remaining employer sponsors of the WRS. Based on observed demographics, this does not seem likely -- but we cannot know for sure until the ORP has been in operation for several years and its election patterns become known.

This "cost" would indirectly depend on the contribution level set up for the defined contribution "ORP", since the higher the contribution, the more employees would join that plan. Note that actual benefits cost would be created by having an ORP only if that plan's contribution level would, for employees joining it, exceed their true Entry Age Normal Cost rate *if they had been in the WRS*. If it is necessary to monitor this EANC rate to determine the ORP's contribution or the amount of an "equalization payment" payable by the UW System to the WRS to "keep the WRS whole", then a significant amount of recordkeeping and actuarial work will be needed to accomplish this. This would, of course, create some cost.

The ultimate costs shown in the following tables for optional plans or improved versions of the WRS to be offered only to new UW employees would first become fully payable in the year 2037, and would remain constant thereafter as a percentage of the ORP payroll.

In the GRS report the cost of an improved death benefit is included in the costs stated for Alternatives 1a, 1b, 1c, 2a, 2b, and 2c. Here, the death benefit costs are not included in the stated costs for the six "alternatives" considered in this report. Page 11 of the GRS report gives the separate cost of the death benefit portion of these "alternatives" as 0.03% of payroll for general employees. Based on this, and allowing for the higher UW turnover, the separate death benefit cost for UW employees (current or future) must be about 0.02% of payroll. Therefore, to get costs for any year that include the death benefit change in the "Alternatives", add 0.02% to the "no death benefit" cost percentages, and multiply the resulting percentage by the year's payroll. For "General" employees, do likewise, only using 0.03% instead of 0.02%. For the other groups use rates from page 11 of the GRS report.

At the end of this section is a table of factors that can be used to calculate the emergence of annual costs for any benefit proposal offered only to future UW employees. This would not have to be a retirement plan offering. For example, these tables would be applicable if the cost of new employees' health insurance during the first six months of their employment were to be picked up by the university.

Table 1.

Estimated Amount of WRS Annual Cost Shifted  
By Migration of Future University Employees  
Into an Optional Retirement Plan

(All amounts are in year 2000 dollars.)

Year	Low Estimate	High Estimate
1	\$ 530,000	\$ 720,000
2	1,020,000	1,390,000
3	1,490,000	2,030,000
4	1,930,000	2,640,000
5	2,360,000	3,220,000
6	2,760,000	3,770,000
7	3,150,000	4,300,000
8	3,530,000	4,810,000
9	3,900,000	5,310,000
10	4,260,000	5,800,000
15	6,000,000	8,170,000
20	7,500,000	10,220,000
25	8,630,000	11,760,000
30	9,320,000	12,690,000
35	9,560,000	13,020,000
40 & later	9,580,000	13,040,000
30 & later	0.14% of payroll*	0.20% of payroll*

\* These percentages are of WRS "General" payroll.

**Explanation:** Cost impacts on the WRS shown in Table 1 are only rough estimates. To understand why, refer to the discussion of "antiselection" on page 41. Better cost estimates would require careful monitoring and analysis of the experience of an ORP after it was established, and would first be possible to make five or six years thereafter. By contrast, costs shown in Tables 2 and 3 (which are actual cost increases and not shifted costs) are reliable actuarial estimates. This is because no rates of plan selection had to be surmised for Tables 2 and 3. The optional retirement plan would be subject to election by future employees, while "Alternative" improved versions of the WRS money purchase plan reflected in Tables 2 and 3 are assumed to include all employees in whatever group they would apply to. (It is possible, of course, to make an improved version of the WRS subject to employee election, requiring those electing it to bear part of its additional cost. However, that is beyond the scope of this study.)

Table 2. Costs to Improve WRS Money Purchase Crediting Rates  
(as percentages of the covered payrolls)

WRS Groups	Proposed Changes to WRS Money Purchase Accumulation					
	2a	2c	3a	3b	3c	3d
<b>Future UW Employees</b>						
• Expected cost	0.135%	0.105%	0.138%	0.111%	0.127%	0.160%
• Maximum cost	0.241%	0.111%	0.219%	0.147%	0.180%	0.234%
<b>General Employees</b>						
• Current cost	0.490%	0.250%	0.455%	0.332%	0.392%	0.479%
• Ultimate cost	0.309%	0.236%	0.316%	0.251%	0.293%	0.357%
<b>Executive &amp; Elected</b>						
• Current cost	0.400%	0.161%	0.358%	0.225%	0.287%	0.386%
• Ultimate cost	0.204%	0.151%	0.210%	0.162%	0.190%	0.249%
<b>Protectives with Social Security</b>						
• Current cost	0.170%	0.061%	0.150%	0.089%	0.117%	0.164%
• Ultimate cost	0.079%	0.057%	0.082%	0.061%	0.073%	0.100%
<b>Protectives without Social Security</b>						
• Current cost	0.060%	0.000%	0.046%	0.007%	0.024%	0.055%
• Ultimate cost	0.002%	0.000%	0.004%	0.000%	0.000%	0.013%

### Explanation and Observations

**Definitions of the "Alternatives":** Alternatives 1a, 1b, 1c, and 2b, described in the GRS report, were rejected for reasons noted in Table P in the "Proposed Solutions" section of this report. Alternatives 2a and 2c from the GRS report, and Alternatives 3a, 3b, 3c, and 3d introduced in this report, are all described in Table P and its footnotes. Please refer to Table P for this information.

**"Current" and "Ultimate" Costs:** Under some conditions, the currently high value of the Transaction Amortization Account would not increase money purchase crediting rates under these "Alternatives". This could be because of adoption of another asset valuation method (like the proposed Market Recognition Account), a severe stock market decline, legislation prohibiting use of the TAA for such purposes, or spending the TAA "surplus" (an apparent, not a real surplus) for other benefit increases. In any event, this should normally occur after 15 years or so, as the TAA depletes naturally. This table's "ultimate" cost levels therefore reflect a neutralized TAA. Near future cost levels that are fed by the currently high TAA are labeled as "current".

Today's high TAA value should be reduced long before most future UW employees are hired. For this group, "neutralized TAA" estimates are the table's "expected" cost. The "maximum" costs listed for them have a high (although undetermined) confidence level. If the other groups were given one of these "Alternatives", and the current TAA "surplus" allowed to increase their money purchase credits, their annual cost levels would at first be the "current" cost percentages -- but should approach the "ultimate" levels of cost within 15 years.

Table 3. Dollar Costs to Improve WRS Money Purchase Crediting Rates  
(Annual costs shown in units of \$1,000)

WRS Groups	Proposed Changes to WRS Money Purchase Accumulation					
	2a	2c	3a	3b	3c	3d
<b>Future UW Employees</b>						
• <u>Expected costs</u>						
In year 2000	\$ 44	\$ 35	\$ 46	\$ 37	\$ 42	\$ 53
In year 2005	270	211	277	223	255	320
In year 2010	511	398	523	421	482	604
In year 2020	1,078	841	1,105	889	1,018	1,276
In year 2030	1,724	1,345	1,767	1,421	1,628	2,040
• <u>Maximum costs</u>						
In year 2000	\$ 80	\$ 37	\$ 72	\$ 48	\$ 59	\$ 77
In year 2005	484	222	439	294	362	469
In year 2010	914	420	828	555	683	886
In year 2020	1,929	886	1,749	1,171	1,441	1,871
In year 2030	3,086	1,416	2,797	1,873	2,305	2,992

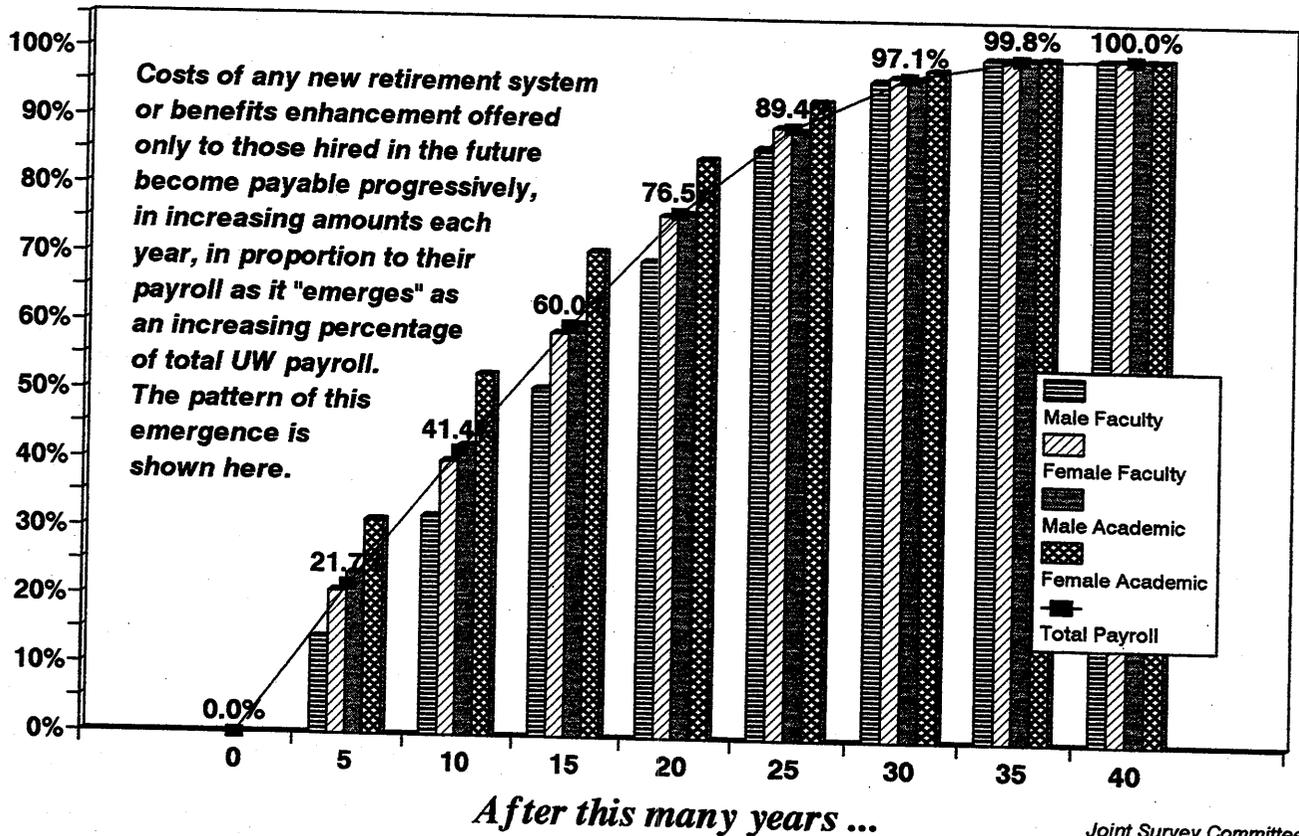
The following costs are for year 2000, and would increase from year to year by from 1% to 5% annually, in proportion to increases in payrolls. Expected increases for these calculations are 2% to 3%. Note that 4.8% payroll increases are assumed for purposes of amortizing the WRS unfunded liability, but this has proven to be too high an estimate for many WRS employers. (Units of \$1,000 are shown in this table.)

WRS Groups	2a	2c	3a	3b	3c	3d
<b>General Employees</b>						
• Current cost	\$35,818	\$18,292	\$33,245	\$24,305	\$28,680	\$34,990
• Ultimate cost	22,611	17,216	23,121	18,369	21,409	26,067
<b>Executive &amp; Elected</b>						
• Current cost	\$292	\$117	\$261	\$164	\$210	\$282
• Ultimate cost	149	110	153	118	139	182
<b>Protectives with Social Security</b>						
• Current cost	\$934	\$334	\$825	\$487	\$643	\$898
• Ultimate cost	434	312	449	336	402	547
<b>Protectives without Social Security</b>						
• Current cost	\$74	\$0	\$57	\$8	\$29	\$69
• Ultimate cost	3	0	4	0	1	16

The footnotes to Table 2 also apply to this table. Please refer to those notes.

# Emergence of New Payroll Over the Next 40 Years

*... this % of payroll is for future hires.*



Joint Survey Committee  
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**Factors to Apply to the Ultimate Cost of a Benefit Change for Future UW System Nonclassified Employees to Find the Cost Incurred Each Year for the First 40 Years after Establishing the Benefit or Plan**

Year No.	Faculty Members		Academic Staff		Total Staff*
	Male	Female	Male	Female	
1	2.51%	4.34%	5.19%	7.26%	4.50%
2	5.17%	8.57%	10.10%	13.96%	8.92%
3	7.97%	12.71%	14.74%	20.14%	13.26%
4	10.92%	16.77%	19.14%	25.84%	17.52%
5	14.05%	20.75%	23.34%	31.13%	21.70%
6	17.37%	24.67%	27.36%	36.03%	25.77%
7	20.84%	28.54%	31.21%	40.58%	29.76%
8	24.43%	32.35%	34.94%	44.84%	33.68%
9	28.10%	36.15%	38.59%	48.87%	37.55%
10	31.81%	39.95%	42.21%	52.78%	41.39%
11	35.55%	43.78%	45.86%	56.64%	45.22%
12	39.31%	47.62%	49.50%	60.41%	49.00%
13	43.10%	51.43%	53.10%	64.05%	52.74%
14	46.90%	55.19%	56.64%	67.51%	56.41%
15	50.71%	58.89%	60.12%	70.78%	60.00%
16	54.54%	62.54%	63.55%	73.87%	63.52%
17	58.34%	66.11%	66.90%	76.78%	66.95%
18	62.11%	69.58%	70.16%	79.50%	70.28%
19	65.83%	72.92%	73.31%	82.04%	73.48%
20	69.50%	76.12%	76.31%	84.39%	76.54%
21	73.11%	79.15%	79.17%	86.52%	79.46%
22	76.63%	82.01%	81.86%	88.46%	82.23%
23	80.01%	84.69%	84.39%	90.22%	84.82%
24	83.19%	87.17%	86.76%	91.81%	87.23%
25	86.10%	89.40%	88.93%	93.23%	89.42%
26	88.72%	91.38%	90.91%	94.50%	91.39%
27	91.04%	93.12%	92.70%	95.62%	93.13%
28	93.10%	94.64%	94.29%	96.59%	94.67%
29	94.89%	95.96%	95.69%	97.42%	96.01%
30	96.38%	97.06%	96.87%	98.12%	97.12%
31	97.53%	97.94%	97.81%	98.68%	98.00%
32	98.38%	98.62%	98.56%	99.13%	98.68%
33	99.01%	99.15%	99.13%	99.47%	99.20%
34	99.47%	99.53%	99.55%	99.72%	99.58%
35	99.78%	99.80%	99.85%	99.90%	99.84%
36	99.82%	99.84%	99.88%	99.92%	99.87%
37	99.87%	99.88%	99.91%	99.94%	99.90%
38	99.91%	99.92%	99.94%	99.96%	99.93%
39	99.96%	99.96%	99.97%	99.98%	99.97%
40	100.00%	100.00%	100.00%	100.00%	100.00%

\* The "Total Staff" factors can be used whenever benefits are offered to new faculty and academic staff alike, and "ultimate cost" is known as a percentage of combined payroll.

*This table can be used very generally for any optional retirement plan or benefit package to be offered to future (but not to current) employees, once its ultimate cost is known as a percentage of payroll.*

**Example:** Based on expected utilization, a benefit to be offered to new faculty will ultimately cost 2.0% of payroll for males plus 2.3% of payroll for females. The benefit commences 1/1/2000, so "Year 1" is 2000. To predict the contribution for 2004, the payroll projection table in the "Population and Payroll" section of this report estimates the two groups' payrolls in year 5 at \$257 million and \$103 million, respectively. The full ultimate cost, if entirely payable in year 5, would be 2.0% of \$257 million for male faculty, or \$5,140,000, plus 2.3% of \$103 million for female faculty, or \$2,369,000. From the table above, in year 5 only 14.05% of ultimate cost has accrued for male faculty, and only 20.75% of ultimate cost for female faculty. The estimated contribution in year 2004 would therefore be: 14.05% of \$5,140,000 plus 20.75% of \$2,369,000 = \$1,214,000.

# **Benefit Projections**

## Assumptions Used for Calculating the Following Tables of Projected Annual Pensions under Retirement Plans of Interest

For versions of the WRS with an improved money purchase plan that are presented in this report (Alternatives 2a, 2c, 3a, 3b, 3c, and 3d), the money purchase crediting rate used for calculations is the average rate expected over the years a future employee's contributions will be in the WRS fund, as computed by the author by direct mathematical analysis. This differs from the computer simulation ("Monte Carlo") method used by Gabriel, Roeder, Smith's actuaries to find most of the rates used for their December 1998 study, and is not subject to the random errors expected from Monte Carlo runs. GRS' computer modeling and the author's analysis were based on assumptions recommended in 1998 by the State of Wisconsin Investment Board -- that the valuation basis rate of return for the WRS trust fund will be normally distributed with a mean and standard deviation both equal to 8%.

Annuity purchase rates used in the following tables for converting defined contribution plan accumulations to annuities at retirement ages 55 through 65 were supplied by actuary Michael Heller of the Teachers Insurance & Annuity Association ("TIAA-CREF"), and are the current rates used by CREF ("College Retirement Equity Fund") for selling variable annuities, having been converted by Mr. Heller to the same 5% interest basis used by the WRS to reserve for annuities when its members retire. Therefore, all pensions contemplated in these tables are priced as single life annuities, with similar expected patterns of post retirement increases as WRS now provides with its dividends.

*In other words, the comparisons of pension amounts in the following graphs and tables are as "apples to apples" as it is possible to make them. The same kind of annuities that increase annually depending on post-retirement investment performance are being compared.*

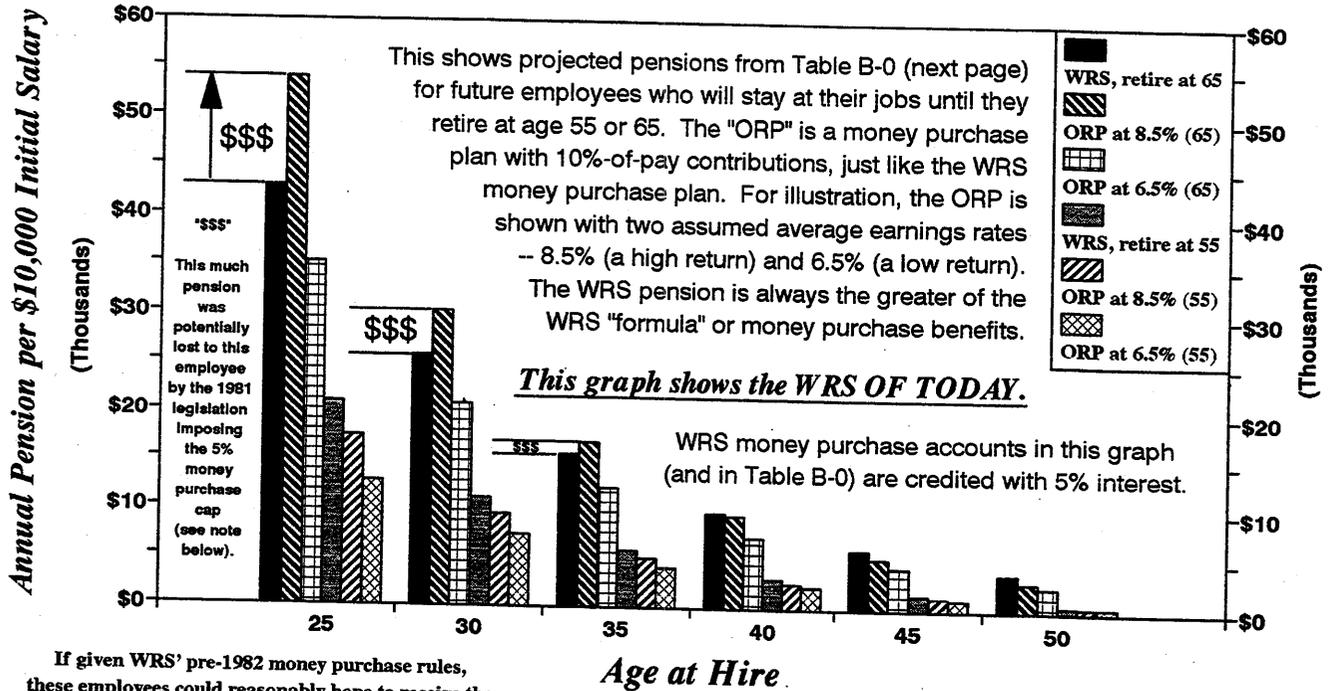
Since the salary projections and all assumed rates of return are also as realistic as we know how to make them, these tables should in every way give the fairest possible comparison of projected retirement benefits under the retirement plans being compared.

Only retirement benefits are studied in this report. Death and disability benefits, and the right to receive refund of contributions upon withdrawal from service are not compared.

The "ORP" referred to in the tables and graphs of this section is basically the optional retirement plan described in 1997's Assembly Bill 331, with one difference: A.B. 331 calls for a contribution into the optional plan equal each year to the statutory level of contribution, as a percentage of each member's payroll, that the university would have contributed that year to the WRS on the member's behalf, had that member been in the WRS instead of the ORP. However, the amount of DC plan contribution used for these tables is 10% of the members' salaries -- exactly the same basis as is used for the WRS money purchase plan.

The six possible modifications to the WRS, called "Alternatives 2a, 2c, 3a, 3b, 3c, and 3d" in this report, and being considered as possible alternatives to an "ORP", are included in the following graphs and tables. The proposed new money purchase crediting rate rules under these "Alternatives" are explained earlier in this report.

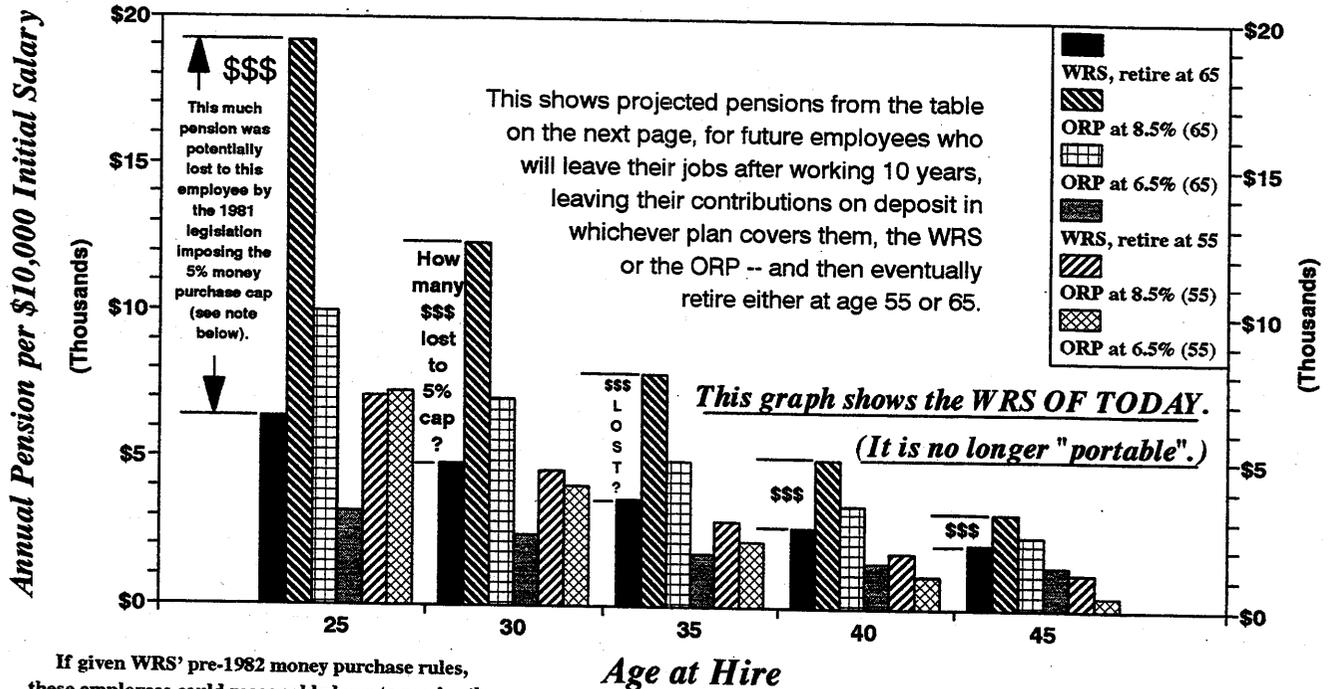
## "Table B-0" Pensions for Those Employees WHO STAY in Service until Retirement



If given WRS' pre-1982 money purchase rules, these employees could reasonably hope to receive the larger of the WRS and "8.5% ORP" benefits shown here.

Joint Survey Committee on Retirement Systems

## "Table B-0" Pensions for Those Employees WHO LEAVE after 10 Years of Service



If given WRS' pre-1982 money purchase rules, these employees could reasonably hope to receive the larger of the WRS and "8.5% ORP" benefits shown here.

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Table B-0

Projected Annual Pension per \$10,000 of Starting Salary, under the WRS or an ORP

Version of the WRS: The current version (WRS money purchase plan earns 5%)

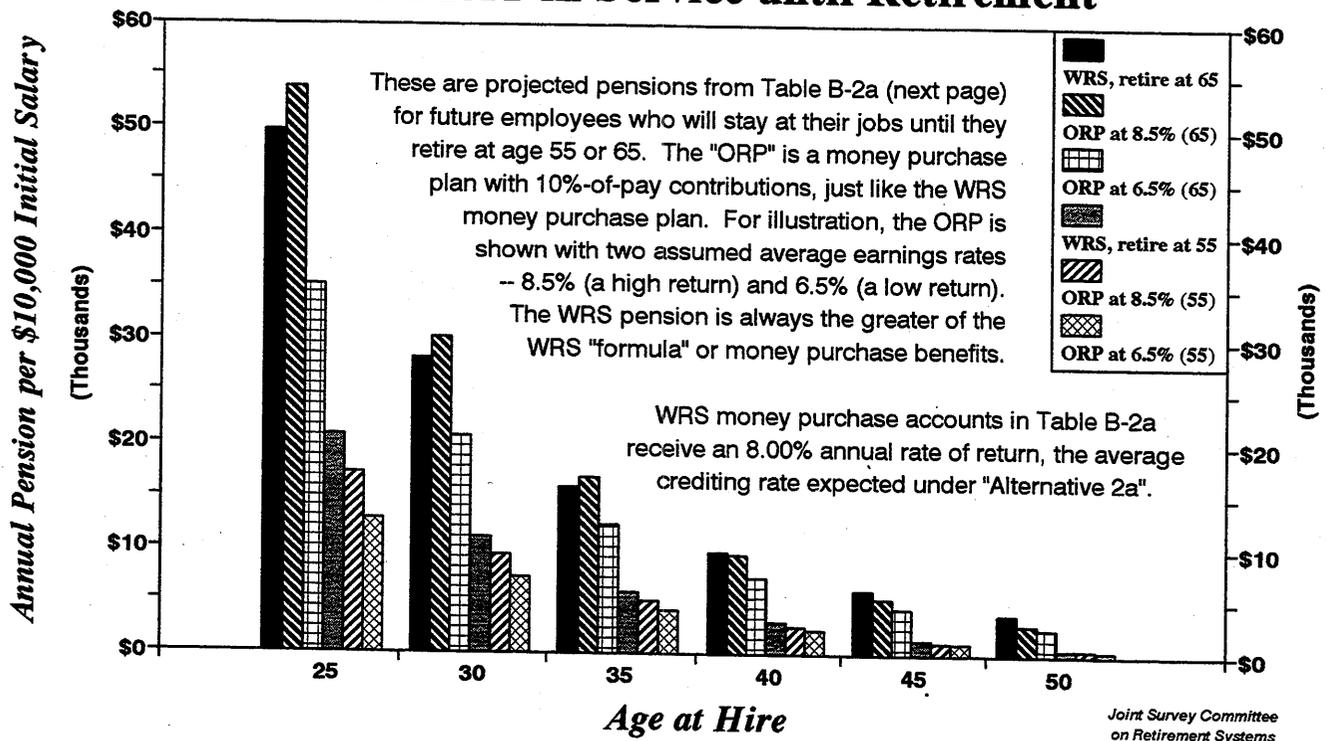
(ORP = "Optional Retirement Plan" is a money purchase plan with a 10% of Pay Contribution)

Age hired	Works until age...	WRS pension under current system* if employee eventually retires...				ORP pension if rate of return is 6.5% (low)		ORP pension if rate of return is 8.5% (high)	
		At age 55		At age 65		Age 55	Age 65	Age 55	Age 65
		Formula	Payable	Formula	Payable				
25	30	\$590	\$1,485	\$1,010	\$2,993	\$2,179	\$4,876	\$3,636	\$9,798
25	35	1,869	3,159	2,884	6,366	4,468	9,997	7,116	19,178
25	40	4,220	4,972	5,927	10,019	6,778	15,165	10,317	27,804
25	45	7,988	7,988	10,294	13,787	8,998	20,132	13,122	35,362
25	50	13,417	13,417	15,972	17,486	11,028	24,675	15,460	41,662
25	55	20,856	20,856	23,070	23,070	12,822	28,688	17,342	46,735
25	65	n/a	n/a	42,845	42,845	n/a	35,159	n/a	53,882
30	35	577	1,146	987	2,309	1,567	3,506	2,383	6,421
30	40	1,753	2,387	2,705	4,810	3,148	7,043	4,574	12,325
30	45	3,763	3,763	5,285	7,389	4,668	10,443	6,493	17,499
30	50	6,788	6,788	8,747	9,922	6,058	13,553	8,094	21,812
30	55	11,055	11,055	13,161	13,161	7,285	16,300	9,383	25,285
30	65	n/a	n/a	25,663	25,663	n/a	20,730	n/a	30,178
35	40	562	883	962	1,778	1,124	2,516	1,558	4,199
35	45	1,624	1,793	2,506	3,613	2,205	4,934	2,924	7,879
35	50	3,322	3,322	4,665	5,414	3,194	7,145	4,062	10,946
35	55	5,810	5,810	7,488	7,488	4,067	9,099	4,978	13,416
35	65	n/a	n/a	15,644	15,644	n/a	12,249	n/a	16,895
40	45	544	677	932	1,364	804	1,798	1,015	2,736
40	50	1,499	1,499	2,313	2,703	1,539	3,443	1,862	5,017
40	55	2,973	2,973	4,176	4,176	2,188	4,896	2,543	6,854
40	65	n/a	n/a	9,694	9,694	n/a	7,238	n/a	9,441
45	50	529	529	906	1,050	576	1,289	663	1,788
45	55	1,414	1,414	2,182	2,182	1,085	2,428	1,198	3,227
45	65	n/a	n/a	6,079	6,079	n/a	4,264	n/a	5,255
50	55	521	521	892	892	416	931	437	1,177
50	65	n/a	n/a	3,727	3,727	n/a	2,432	n/a	2,834
55	65	n/a	n/a	2,080	2,080	n/a	1,257	n/a	1,388

\* "WRS Pension": The WRS is two retirement plans combined, and pays the greater of their two amounts. The "Formula" column results from the WRS benefit formula, which is 1.6% of Final Average Salary times years of service. The "Payable" column is the greater of this or the pension payable under the WRS money purchase plan.

Currently, the WRS money purchase crediting rate is a flat 5% annually. The expected rate of return on WRS money purchase accounts is, of course, 5% compounded annually.

## "Table B-2a" Pensions for Those Employees Who STAY in Service until Retirement



## "Table B-2a" Pensions for Those Employees Who LEAVE after 10 Years of Service

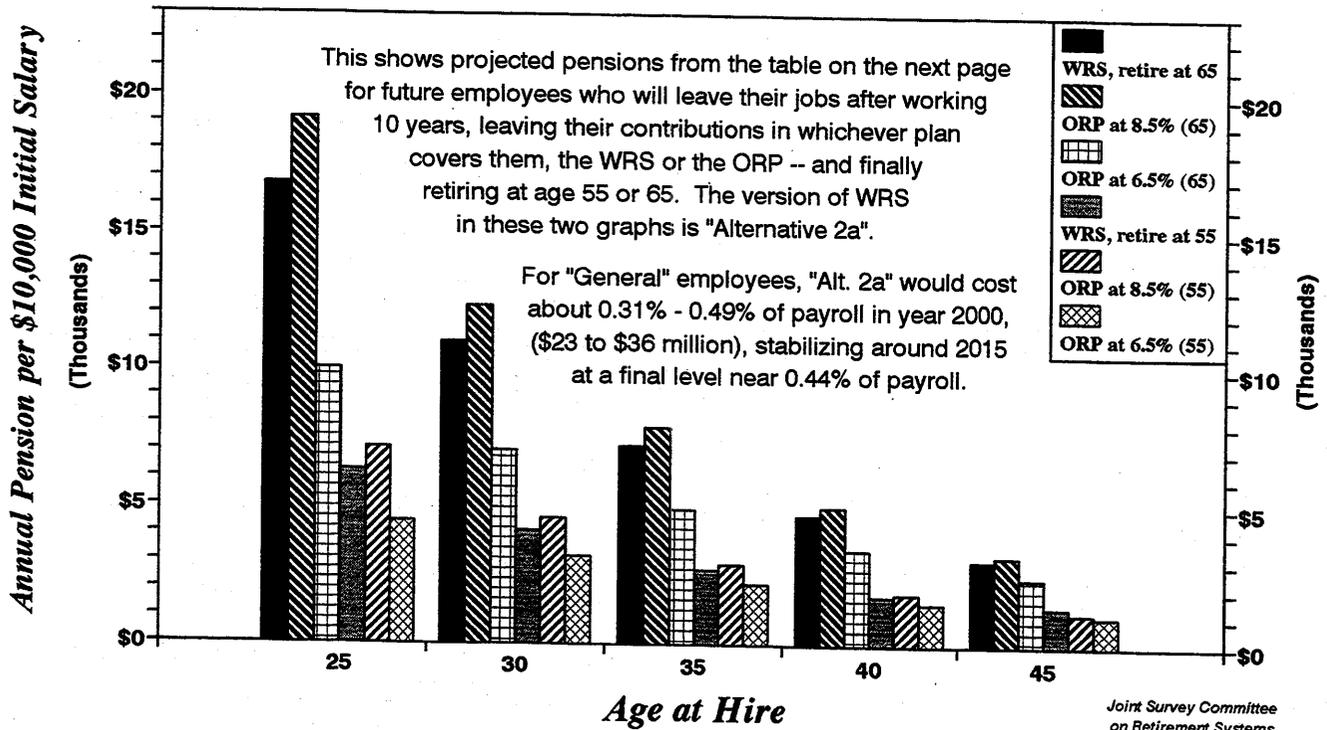


Table B-2a

## Projected Annual Pension per \$10,000 of Starting Salary, under the WRS or an ORP

Version of the WRS: "Alternative 2a" (WRS money purchase plan earns 8%)

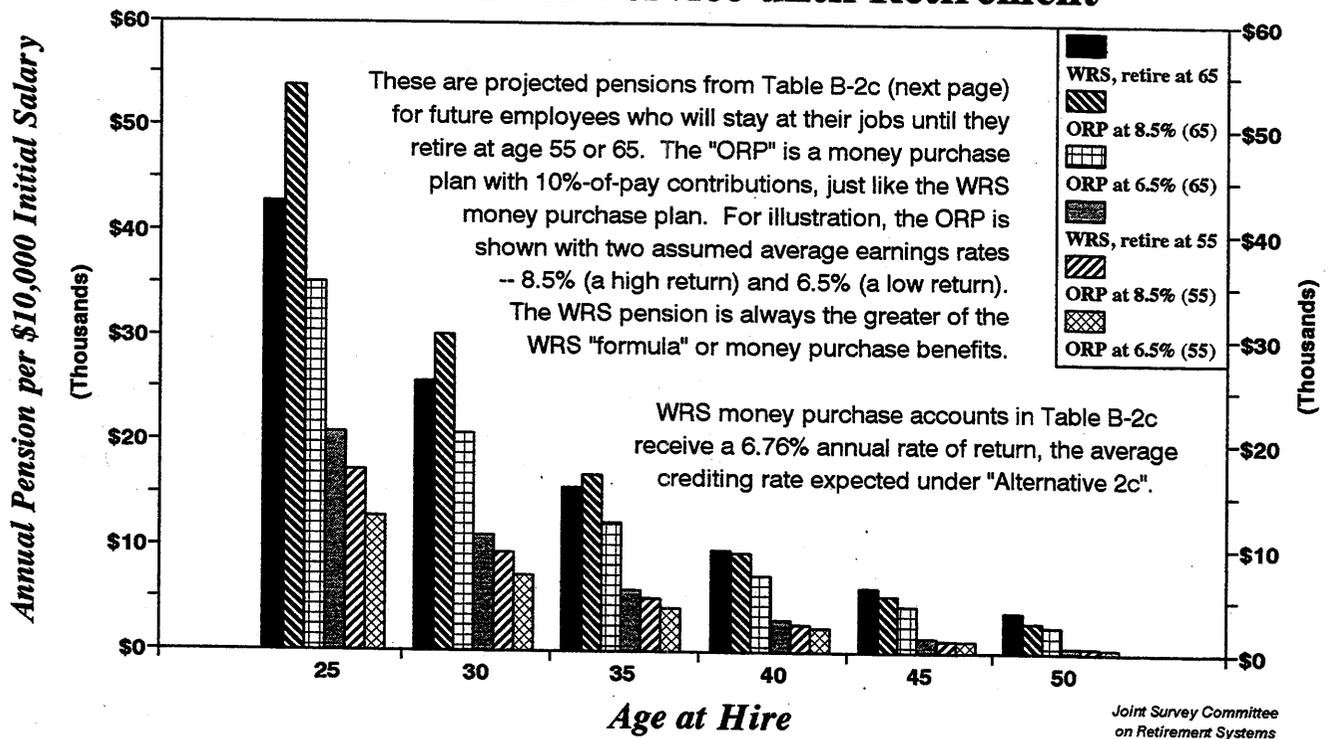
(ORP = "Optional Retirement Plan" is a money purchase plan with a 10% of Pay Contribution)

Age hired	Works until age...	WRS pension under Alternative 2a* if employee eventually retires...				ORP pension if rate of return is 6.5% (low)		ORP pension if rate of return is 8.5% (high)	
		At age 55		At age 65		Age 55	Age 65	Age 55	Age 65
		Formula	Payable	Formula	Payable				
25	30	\$590	\$3,175	\$1,010	\$8,480	\$2,179	\$4,876	\$3,636	\$9,798
25	35	1,869	6,285	2,884	16,786	4,468	9,997	7,116	19,178
25	40	4,220	9,212	5,927	24,603	6,778	15,165	10,317	27,804
25	45	7,988	11,836	10,294	31,612	8,998	20,132	13,122	35,362
25	50	13,417	14,075	15,972	37,590	11,028	24,675	15,460	41,662
25	55	20,856	20,856	23,070	42,516	12,822	28,688	17,342	46,735
25	65	n/a	n/a	42,845	49,691	n/a	35,159	n/a	53,882
30	35	577	2,129	987	5,686	1,567	3,506	2,383	6,421
30	40	1,753	4,133	2,705	11,037	3,148	7,043	4,574	12,325
30	45	3,763	5,929	5,285	15,835	4,668	10,443	6,493	17,499
30	50	6,788	7,462	8,747	19,928	6,058	13,553	8,094	21,812
30	55	11,055	11,055	13,161	23,299	7,285	16,300	9,383	25,285
30	65	n/a	n/a	25,663	28,211	n/a	20,730	n/a	30,178
35	40	562	1,425	962	3,805	1,124	2,516	1,558	4,199
35	45	1,624	2,702	2,506	7,217	2,205	4,934	2,924	7,879
35	50	3,322	3,792	4,665	10,128	3,194	7,145	4,062	10,946
35	55	5,810	5,810	7,488	12,526	4,067	9,099	4,978	13,416
35	65	n/a	n/a	15,644	16,019	n/a	12,249	n/a	16,895
40	45	544	950	932	2,537	804	1,798	1,015	2,736
40	50	1,499	1,760	2,313	4,702	1,539	3,443	1,862	5,017
40	55	2,973	2,973	4,176	6,485	2,188	4,896	2,543	6,854
40	65	n/a	n/a	9,694	9,694	n/a	7,238	n/a	9,441
45	50	529	635	906	1,696	576	1,289	663	1,788
45	55	1,414	1,414	2,182	3,094	1,085	2,428	1,198	3,227
45	65	n/a	n/a	6,079	6,079	n/a	4,264	n/a	5,255
50	55	521	521	892	1,143	416	931	437	1,177
50	65	n/a	n/a	3,727	3,727	n/a	2,432	n/a	2,834
55	65	n/a	n/a	2,080	2,080	n/a	1,257	n/a	1,388

\* "WRS Pension": The WRS is two retirement plans combined, and pays the greater of their two amounts. The "Formula" column results from the WRS benefit formula, which is 1.6% of Final Average Salary times years of service. The "Payable" column is the greater of this or the pension payable under the WRS money purchase plan.

"Alternative 2a" would credit WRS money purchase accounts with the full experienced investment return. The expected average rate credited would be 8.00%.

## "Table B-2c" Pensions for Those Employees Who STAY in Service until Retirement



## "Table B-2c" Pensions for Those Employees Who LEAVE after 10 Years of Service

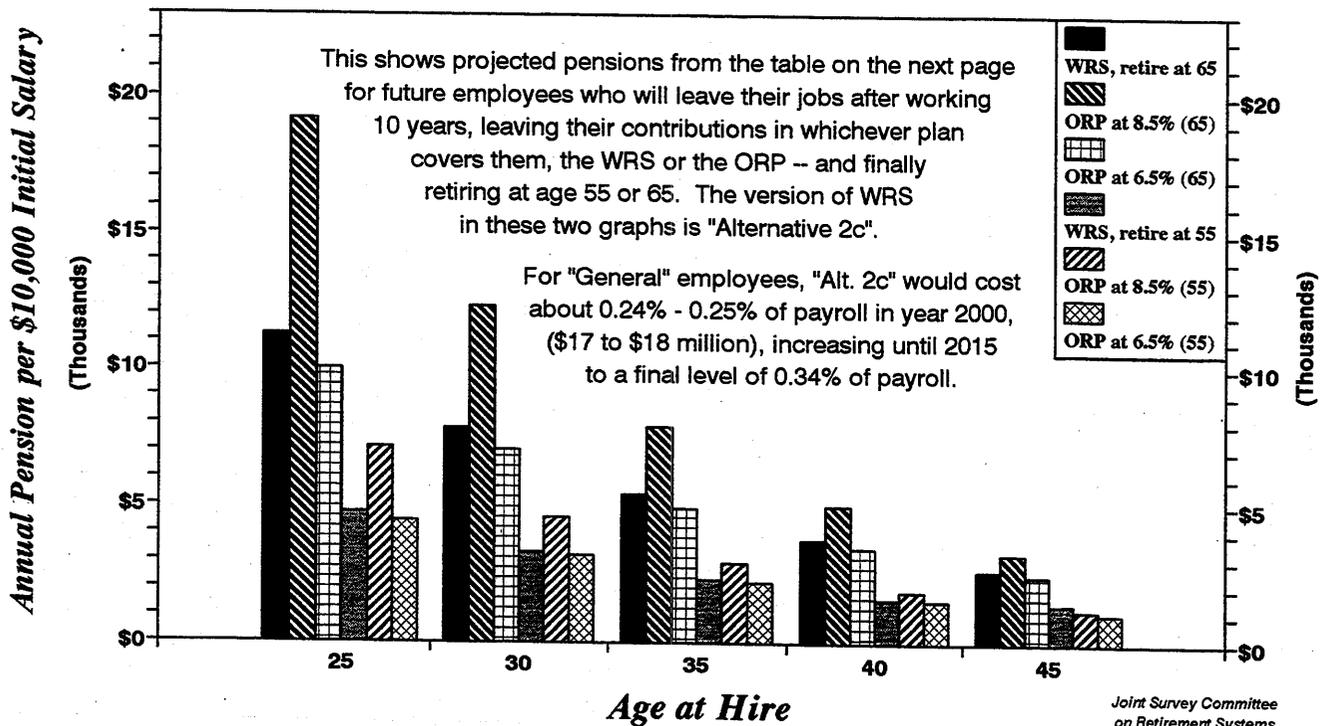


Table B-2c

## Projected Annual Pension per \$10,000 of Starting Salary, under the WRS or an ORP

Version of the WRS: "Alternative 2c" (WRS money purchase plan earns 6.8%)

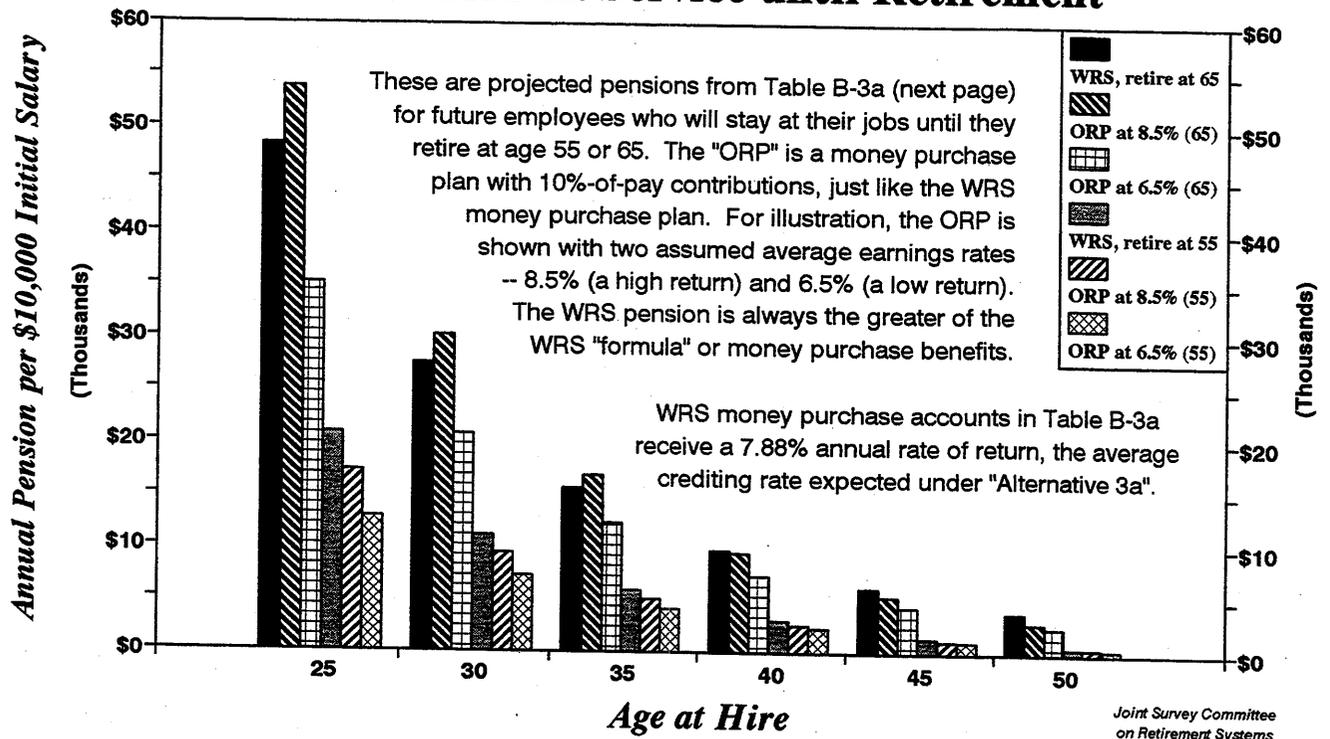
(ORP = "Optional Retirement Plan" is a money purchase plan with a 10% of Pay Contribution)

Age hired	Works until age...	WRS pension under Alternative 2c* if employee eventually retires...				ORP pension if rate of return is 6.5% (low)		ORP pension if rate of return is 8.5% (high)	
		At age 55		At age 65		Age 55	Age 65	Age 55	Age 65
		Formula	Payable	Formula	Payable				
25	30	\$590	\$2,323	\$1,010	\$5,525	\$2,179	\$4,876	\$3,636	\$9,798
25	35	1,869	4,733	2,884	11,259	4,468	9,997	7,116	19,178
25	40	4,220	7,137	5,927	16,976	6,778	15,165	10,317	27,804
25	45	7,988	9,419	10,294	22,405	8,998	20,132	13,122	35,362
25	50	13,417	13,417	15,972	27,312	11,028	24,675	15,460	41,662
25	55	20,856	20,856	23,070	31,595	12,822	28,688	17,342	46,735
25	65	n/a	n/a	42,845	42,845	n/a	35,159	n/a	53,882
30	35	577	1,650	987	3,925	1,567	3,506	2,383	6,421
30	40	1,753	3,295	2,705	7,838	3,148	7,043	4,574	12,325
30	45	3,763	4,858	5,285	11,555	4,668	10,443	6,493	17,499
30	50	6,788	6,788	8,747	14,914	6,058	13,553	8,094	21,812
30	55	11,055	11,055	13,161	17,846	7,285	16,300	9,383	25,285
30	65	n/a	n/a	25,663	25,663	n/a	20,730	n/a	30,178
35	40	562	1,170	962	2,783	1,124	2,516	1,558	4,199
35	45	1,624	2,281	2,506	5,426	2,205	4,934	2,924	7,879
35	50	3,322	3,322	4,665	7,815	3,194	7,145	4,062	10,946
35	55	5,810	5,810	7,488	9,900	4,067	9,099	4,978	13,416
35	65	n/a	n/a	15,644	15,644	n/a	12,249	n/a	16,895
40	45	544	826	932	1,966	804	1,798	1,015	2,736
40	50	1,499	1,573	2,313	3,742	1,539	3,443	1,862	5,017
40	55	2,973	2,973	4,176	5,293	2,188	4,896	2,543	6,854
40	65	n/a	n/a	9,694	9,694	n/a	7,238	n/a	9,441
45	50	529	585	906	1,392	576	1,289	663	1,788
45	55	1,414	1,414	2,182	2,608	1,085	2,428	1,198	3,227
45	65	n/a	n/a	6,079	6,079	n/a	4,264	n/a	5,255
50	55	521	521	892	993	416	931	437	1,177
50	65	n/a	n/a	3,727	3,727	n/a	2,432	n/a	2,834
55	65	n/a	n/a	2,080	2,080	n/a	1,257	n/a	1,388

\* "WRS Pension": The WRS is two retirement plans combined, and pays the greater of their two amounts. The "Formula" column results from the WRS benefit formula, which is 1.6% of Final Average Salary times years of service. The "Payable" column is the greater of this or the pension payable under the WRS money purchase plan.

"Alternative 2c" would credit WRS money purchase accounts with all investment return up to 8%, but not less than 5%. The expected average rate credited would be 6.76%.

## "Table B-3a" Pensions for Those Employees Who STAY in Service until Retirement



## "Table B-3a" Pensions for Those Employees Who LEAVE after 10 Years of Service

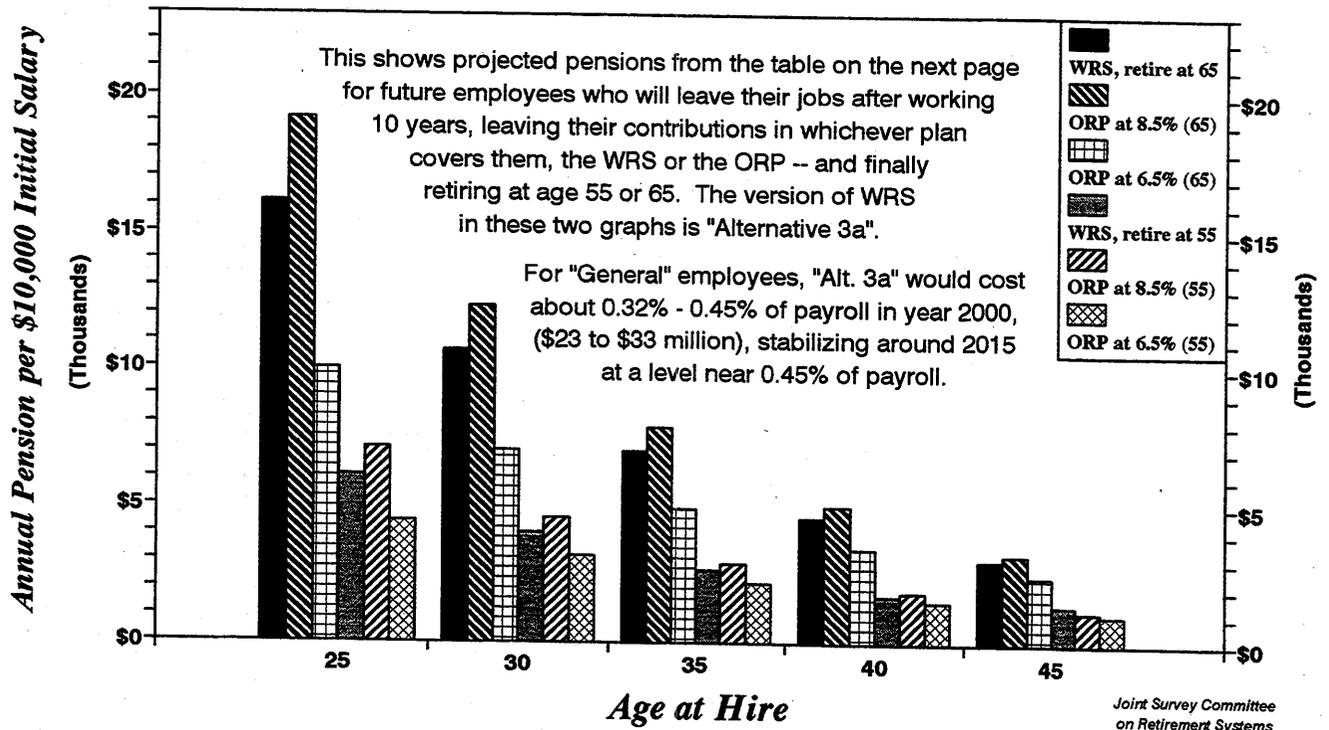


Table B-3a

Projected Annual Pension per \$10,000 of Starting Salary, under the WRS or an ORP

Version of the WRS: "Alternative 3a" (WRS money purchase plan earns 7.9%)

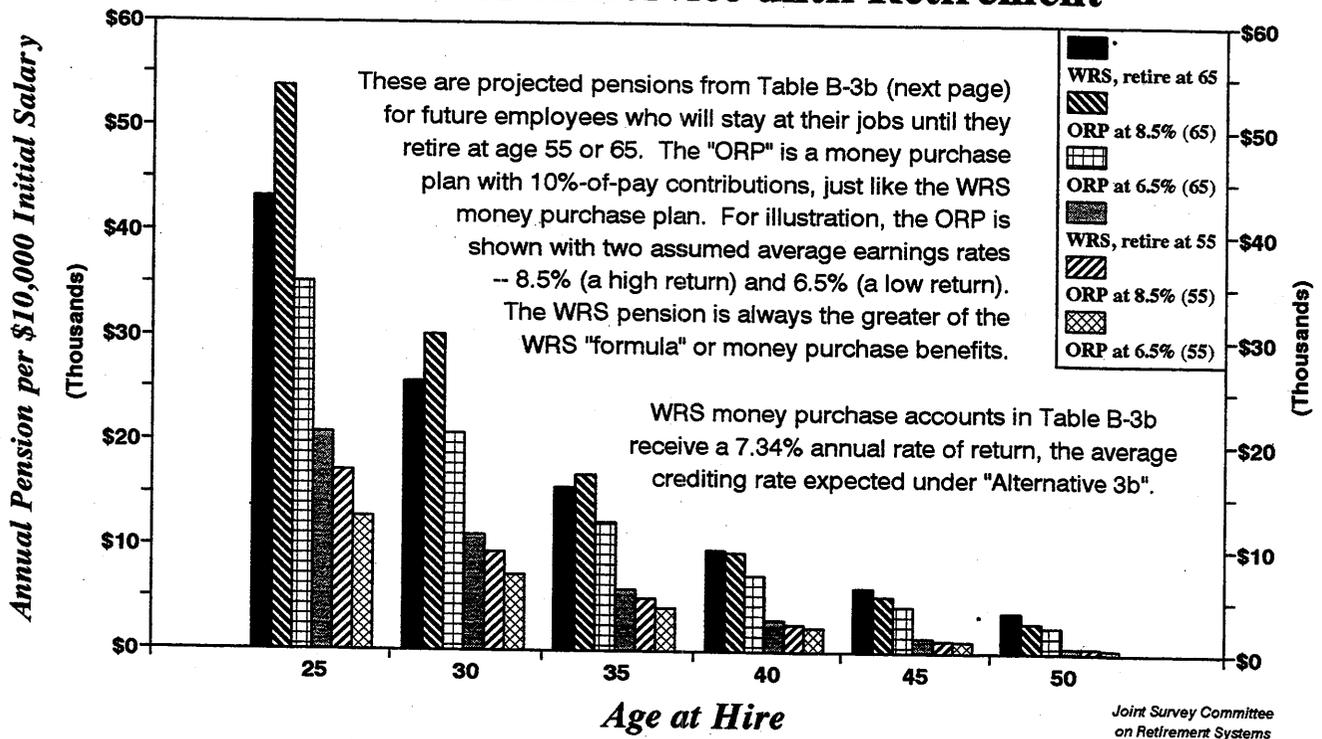
(ORP = "Optional Retirement Plan" is a money purchase plan with a 10% of Pay Contribution)

Age hired	Works until age...	WRS pension under Alternative 3a* if employee eventually retires...				ORP pension if rate of return is 6.5% (low)		ORP pension if rate of return is 8.5% (high)	
		At age 55		At age 65		Age 55	Age 65	Age 55	Age 65
		Formula	Payable	Formula	Payable				
25	30	\$590	\$3,078	\$1,010	\$8,125	\$2,179	\$4,876	\$3,636	\$9,798
25	35	1,869	6,110	2,884	16,130	4,468	9,997	7,116	19,178
25	40	4,220	8,979	5,927	23,706	6,778	15,165	10,317	27,804
25	45	7,988	11,567	10,294	30,538	8,998	20,132	13,122	35,362
25	50	13,417	13,788	15,972	36,400	11,028	24,675	15,460	41,662
25	55	20,856	20,856	23,070	41,257	12,822	28,688	17,342	46,735
25	65	n/a	n/a	42,845	48,392	n/a	35,159	n/a	53,882
30	35	577	2,076	987	5,480	1,567	3,506	2,383	6,421
30	40	1,753	4,040	2,705	10,666	3,148	7,043	4,574	12,325
30	45	3,763	5,812	5,285	15,343	4,668	10,443	6,493	17,499
30	50	6,788	7,332	8,747	19,355	6,058	13,553	8,094	21,812
30	55	11,055	11,055	13,161	22,681	7,285	16,300	9,383	25,285
30	65	n/a	n/a	25,663	27,565	n/a	20,730	n/a	30,178
35	40	562	1,397	962	3,688	1,124	2,516	1,558	4,199
35	45	1,624	2,657	2,506	7,014	2,205	4,934	2,924	7,879
35	50	3,322	3,738	4,665	9,868	3,194	7,145	4,062	10,946
35	55	5,810	5,810	7,488	12,233	4,067	9,099	4,978	13,416
35	65	n/a	n/a	15,644	15,706	n/a	12,249	n/a	16,895
40	45	544	937	932	2,473	804	1,798	1,015	2,736
40	50	1,499	1,741	2,313	4,595	1,539	3,443	1,862	5,017
40	55	2,973	2,973	4,176	6,354	2,188	4,896	2,543	6,854
40	65	n/a	n/a	9,694	9,694	n/a	7,238	n/a	9,441
45	50	529	630	906	1,663	576	1,289	663	1,788
45	55	1,414	1,414	2,182	3,042	1,085	2,428	1,198	3,227
45	65	n/a	n/a	6,079	6,079	n/a	4,264	n/a	5,255
50	55	521	521	892	1,127	416	931	437	1,177
50	65	n/a	n/a	3,727	3,727	n/a	2,432	n/a	2,834
55	65	n/a	n/a	2,080	2,080	n/a	1,257	n/a	1,388

\* "WRS Pension": The WRS is two retirement plans combined, and pays the greater of their two amounts. The "Formula" column results from the WRS benefit formula, which is 1.6% of Final Average Salary times years of service. The "Payable" column is the greater of this or the pension payable under the WRS money purchase plan.

"Alternative 3a" would credit WRS money purchase accounts with all investment return, less 1%, but always crediting at least 0%. The expected average rate would be 7.88%.

## "Table B-3b" Pensions for Those Employees Who STAY in Service until Retirement



## "Table B-3b" Pensions for Those Employees Who LEAVE after 10 Years of Service

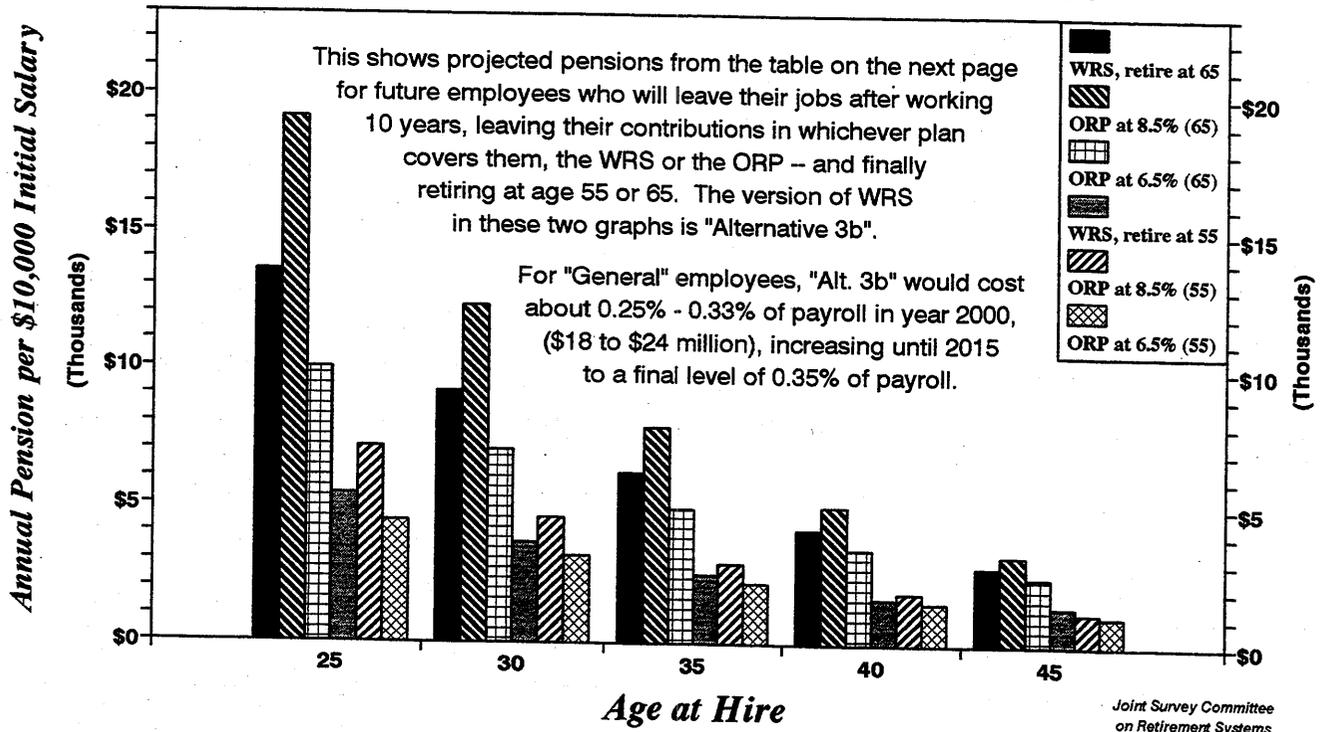


Table B-3b

Projected Annual Pension per \$10,000 of Starting Salary, under the WRS or an ORP

Version of the WRS: "Alternative 3b" (WRS money purchase plan earns 7.3%)

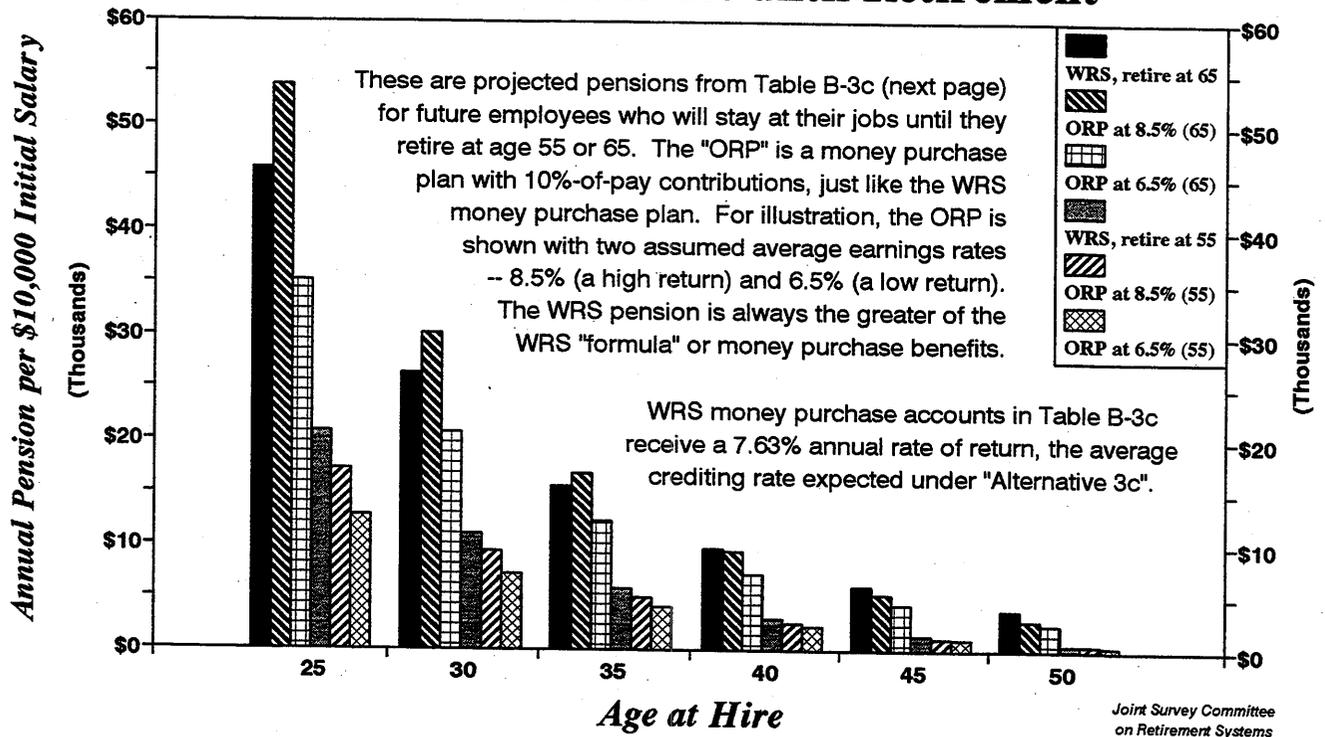
(ORP = "Optional Retirement Plan" is a money purchase plan with a 10% of Pay Contribution)

Age hired	Works until age...	WRS pension under Alternative 3b* if employee eventually retires...				ORP pension if rate of return is 6.5% (low)		ORP pension if rate of return is 8.5% (high)	
		At age 55		At age 65		Age 55	Age 65	Age 55	Age 65
		Formula	Payable	Formula	Payable				
25	30	\$590	\$2,688	\$1,010	\$6,749	\$2,179	\$4,876	\$3,636	\$9,798
25	35	1,869	5,403	2,884	13,567	4,468	9,997	7,116	19,178
25	40	4,220	8,038	5,927	20,183	6,778	15,165	10,317	27,804
25	45	7,988	10,474	10,294	26,300	8,998	20,132	13,122	35,362
25	50	13,417	13,417	15,972	31,681	11,028	24,675	15,460	41,662
25	55	20,856	20,856	23,070	36,253	12,822	28,688	17,342	46,735
25	65	n/a	n/a	42,845	43,217	n/a	35,159	n/a	53,882
30	35	577	1,859	987	4,667	1,567	3,506	2,383	6,421
30	40	1,753	3,662	2,705	9,196	3,148	7,043	4,574	12,325
30	45	3,763	5,330	5,285	13,383	4,668	10,443	6,493	17,499
30	50	6,788	6,797	8,747	17,067	6,058	13,553	8,094	21,812
30	55	11,055	11,055	13,161	20,197	7,285	16,300	9,383	25,285
30	65	n/a	n/a	25,663	25,663	n/a	20,730	n/a	30,178
35	40	562	1,283	962	3,221	1,124	2,516	1,558	4,199
35	45	1,624	2,469	2,506	6,199	2,205	4,934	2,924	7,879
35	50	3,322	3,512	4,665	8,819	3,194	7,145	4,062	10,946
35	55	5,810	5,810	7,488	11,044	4,067	9,099	4,978	13,416
35	65	n/a	n/a	15,644	15,644	n/a	12,249	n/a	16,895
40	45	544	882	932	2,214	804	1,798	1,015	2,736
40	50	1,499	1,658	2,313	4,163	1,539	3,443	1,862	5,017
40	55	2,973	2,973	4,176	5,818	2,188	4,896	2,543	6,854
40	65	n/a	n/a	9,694	9,694	n/a	7,238	n/a	9,441
45	50	529	608	906	1,527	576	1,289	663	1,788
45	55	1,414	1,414	2,182	2,824	1,085	2,428	1,198	3,227
45	65	n/a	n/a	6,079	6,079	n/a	4,264	n/a	5,255
50	55	521	521	892	1,061	416	931	437	1,177
50	65	n/a	n/a	3,727	3,727	n/a	2,432	n/a	2,834
55	65	n/a	n/a	2,080	2,080	n/a	1,257	n/a	1,388

\* "WRS Pension": The WRS is two retirement plans combined, and pays the greater of their two amounts. The "Formula" column results from the WRS benefit formula, which is 1.6% of Final Average Salary times years of service. The "Payable" column is the greater of this or the pension payable under the WRS money purchase plan.

"Alternative 3b" would credit WRS money purchase accounts with all investment return, less 2%, but always crediting at least 1%. The expected average rate would be 7.34%.

## "Table B-3c" Pensions for Those Employees Who STAY in Service until Retirement



## "Table B-3c" Pensions for Those Employees Who LEAVE after 10 Years of Service

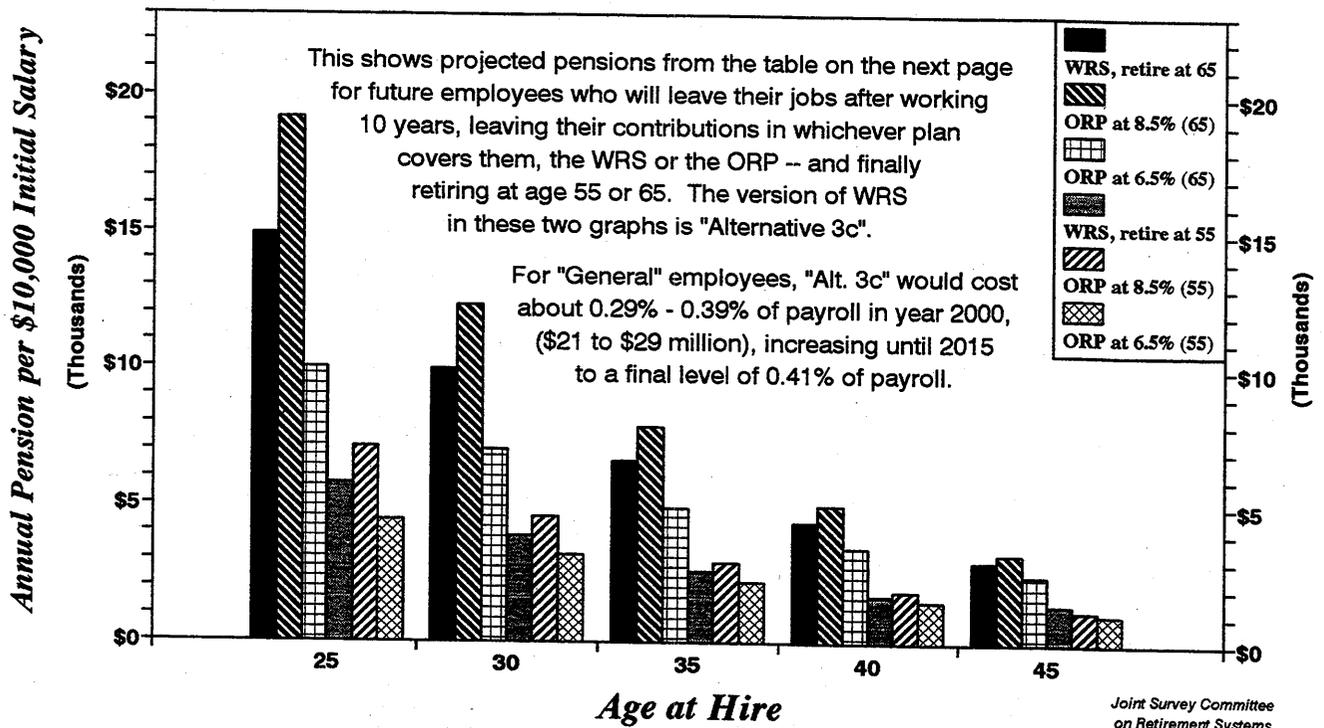


Table B-3c

## Projected Annual Pension per \$10,000 of Starting Salary, under the WRS or an ORP

Version of the WRS: "Alternative 3c" (WRS money purchase plan earns 7.6%)

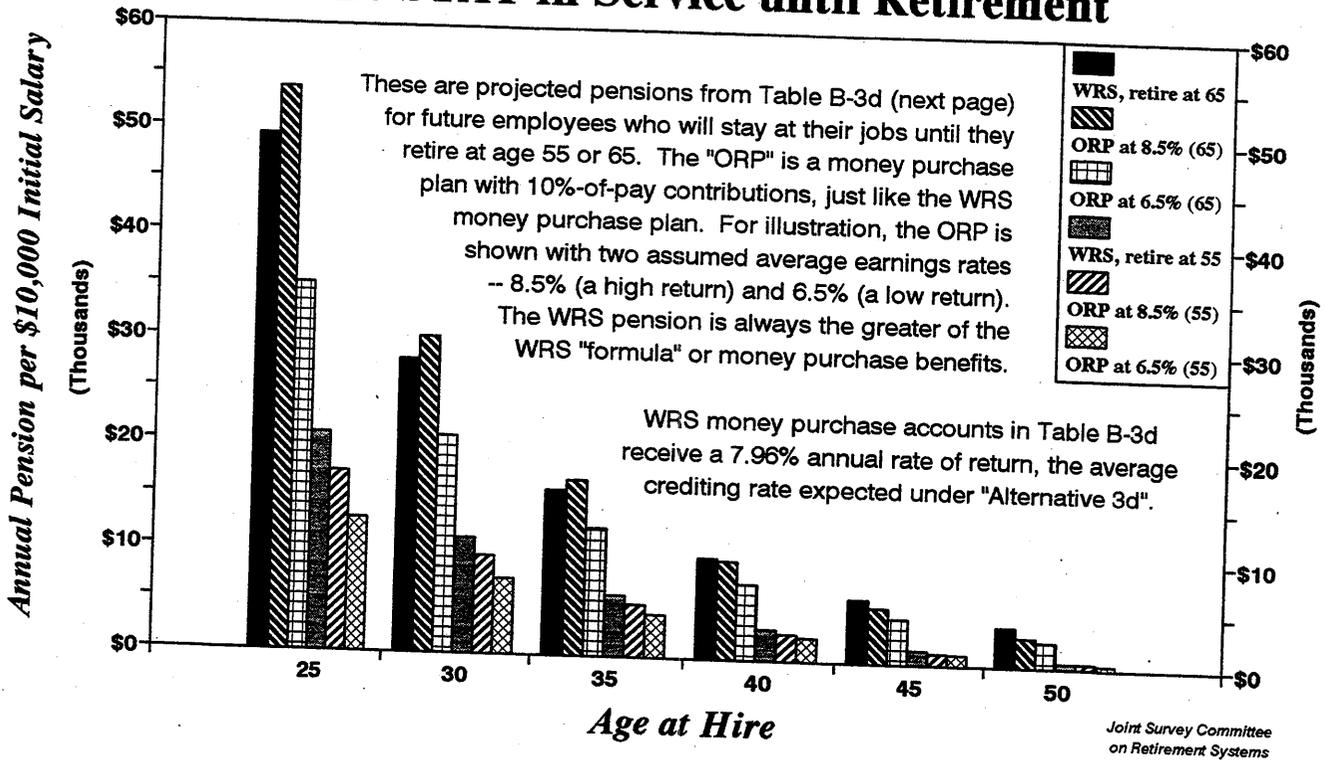
(ORP = "Optional Retirement Plan" is a money purchase plan with a 10% of Pay Contribution)

Age hired	Works until age...	WRS pension under Alternative 3c* if employee eventually retires...		ORP pension if rate of return is 6.5% (low)		ORP pension if rate of return is 8.5% (high)			
		Formula	Payable	Formula	Payable	Age 55	Age 65	Age 55	Age 65
25	30	\$590	\$2,892	\$1,010	\$7,459	\$2,179	\$4,876	\$3,636	\$9,798
25	35	1,869	5,773	2,884	14,893	4,468	9,997	7,116	19,178
25	40	4,220	8,532	5,927	22,011	6,778	15,165	10,317	27,804
25	45	7,988	11,049	10,294	28,504	8,998	20,132	13,122	35,362
25	50	13,417	13,417	15,972	34,139	11,028	24,675	15,460	41,662
25	55	20,856	20,856	23,070	38,863	12,822	28,688	17,342	46,735
25	65	n/a	n/a	42,845	45,918	n/a	35,159	n/a	53,882
30	35	577	1,973	987	5,089	1,567	3,506	2,383	6,421
30	40	1,753	3,861	2,705	9,961	3,148	7,043	4,574	12,325
30	45	3,763	5,584	5,285	14,406	4,668	10,443	6,493	17,499
30	50	6,788	7,080	8,747	18,264	6,058	13,553	8,094	21,812
30	55	11,055	11,055	13,161	21,497	7,285	16,300	9,383	25,285
30	65	n/a	n/a	25,663	26,327	n/a	20,730	n/a	30,178
35	40	562	1,343	962	3,465	1,124	2,516	1,558	4,199
35	45	1,624	2,568	2,506	6,626	2,205	4,934	2,924	7,879
35	50	3,322	3,632	4,665	9,369	3,194	7,145	4,062	10,946
35	55	5,810	5,810	7,488	11,669	4,067	9,099	4,978	13,416
35	65	n/a	n/a	15,644	15,644	n/a	12,249	n/a	16,895
40	45	544	911	932	2,351	804	1,798	1,015	2,736
40	50	1,499	1,702	2,313	4,391	1,539	3,443	1,862	5,017
40	55	2,973	2,973	4,176	6,101	2,188	4,896	2,543	6,854
40	65	n/a	n/a	9,694	9,694	n/a	7,238	n/a	9,441
45	50	529	620	906	1,599	576	1,289	663	1,788
45	55	1,414	1,414	2,182	2,939	1,085	2,428	1,198	3,227
45	65	n/a	n/a	6,079	6,079	n/a	4,264	n/a	5,255
50	55	521	521	892	1,096	416	931	437	1,177
50	65	n/a	n/a	3,727	3,727	n/a	2,432	n/a	2,834
55	65	n/a	n/a	2,080	2,080	n/a	1,257	n/a	1,388

\* "WRS Pension": The WRS is two retirement plans combined, and pays the greater of their two amounts. The "Formula" column results from the WRS benefit formula, which is 1.6% of Final Average Salary times years of service. The "Payable" column is the greater of this or the pension payable under the WRS money purchase plan.

"Alternative 3c" would credit WRS money purchase accounts with all investment return, less 2%, but always crediting at least 2%. The expected average rate would be 7.63%.

## "Table B-3d" Pensions for Those Employees Who STAY in Service until Retirement



## "Table B-3d" Pensions for Those Employees Who LEAVE after 10 Years of Service

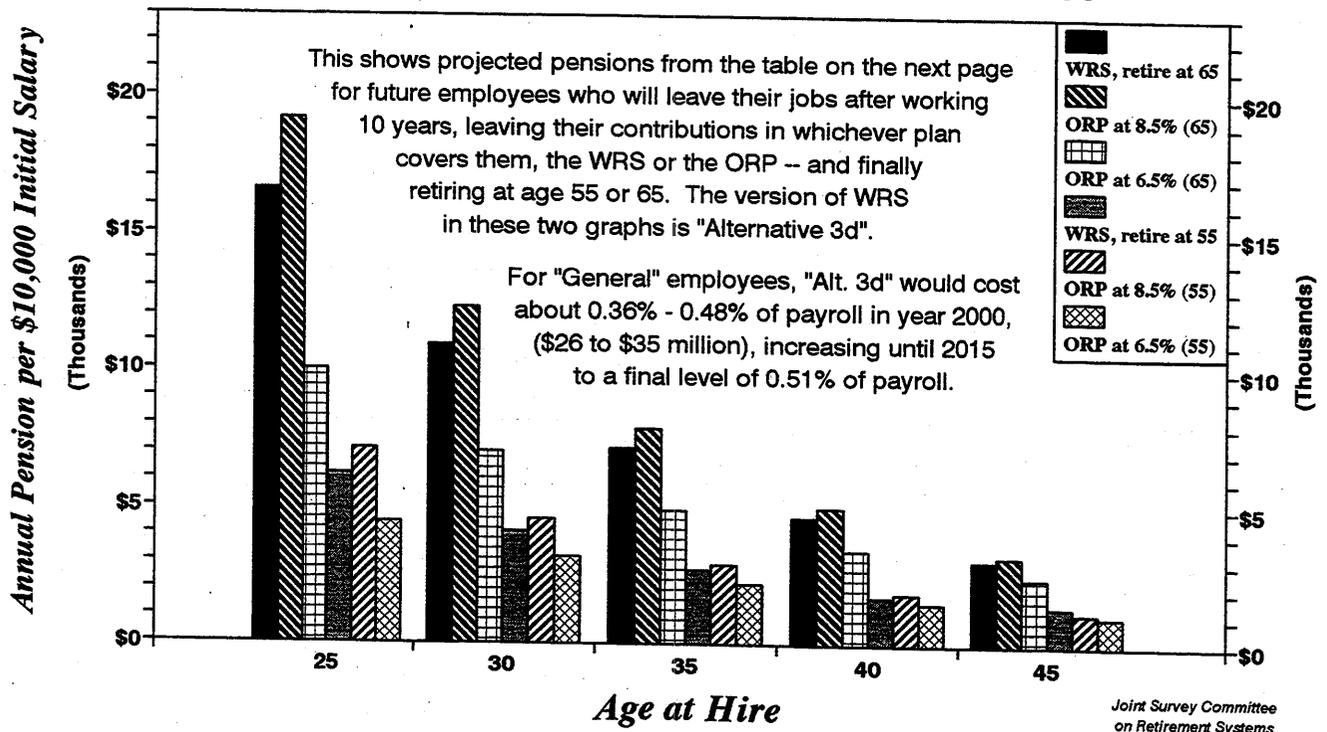


Table B-3d

## Projected Annual Pension per \$10,000 of Starting Salary, under the WRS or an ORP

Version of the WRS: "Alternative 3d" (WRS money purchase plan earns 7.96%)

(ORP = "Optional Retirement Plan" is a money purchase plan with a 10% of Pay Contribution)

Age hired	Works until age...	WRS pension under Alternative 3d* if employee eventually retires...				ORP pension if rate of return is 6.5% (low)		ORP pension if rate of return is 8.5% (high)	
		At age 55		At age 65		Age 55	Age 65	Age 55	Age 65
		Formula	Payable	Formula	Payable				
25	30	\$590	\$3,144	\$1,010	\$8,367	\$2,179	\$4,876	\$3,636	\$9,798
25	35	1,869	6,230	2,884	16,577	4,468	9,997	7,116	19,178
25	40	4,220	9,138	5,927	24,318	6,778	15,165	10,317	27,804
25	45	7,988	11,751	10,294	31,270	8,998	20,132	13,122	35,362
25	50	13,417	13,984	15,972	37,212	11,028	24,675	15,460	41,662
25	55	20,856	20,856	23,070	42,116	12,822	28,688	17,342	46,735
25	65	n/a	n/a	42,845	49,278	n/a	35,159	n/a	53,882
30	35	577	2,112	987	5,621	1,567	3,506	2,383	6,421
30	40	1,753	4,103	2,705	10,919	3,148	7,043	4,574	12,325
30	45	3,763	5,892	5,285	15,679	4,668	10,443	6,493	17,499
30	50	6,788	7,420	8,747	19,746	6,058	13,553	8,094	21,812
30	55	11,055	11,055	13,161	23,103	7,285	16,300	9,383	25,285
30	65	n/a	n/a	25,663	28,006	n/a	20,730	n/a	30,178
35	40	562	1,416	962	3,768	1,124	2,516	1,558	4,199
35	45	1,624	2,688	2,506	7,153	2,205	4,934	2,924	7,879
35	50	3,322	3,775	4,665	10,046	3,194	7,145	4,062	10,946
35	55	5,810	5,810	7,488	12,433	4,067	9,099	4,978	13,416
35	65	n/a	n/a	15,644	15,920	n/a	12,249	n/a	16,895
40	45	544	946	932	2,517	804	1,798	1,015	2,736
40	50	1,499	1,754	2,313	4,668	1,539	3,443	1,862	5,017
40	55	2,973	2,973	4,176	6,443	2,188	4,896	2,543	6,854
40	65	n/a	n/a	9,694	9,694	n/a	7,238	n/a	9,441
45	50	529	634	906	1,686	576	1,289	663	1,788
45	55	1,414	1,414	2,182	3,078	1,085	2,428	1,198	3,227
45	65	n/a	n/a	6,079	6,079	n/a	4,264	n/a	5,255
50	55	521	521	892	1,138	416	931	437	1,177
50	65	n/a	n/a	3,727	3,727	n/a	2,432	n/a	2,834
55	65	n/a	n/a	2,080	2,080	n/a	1,257	n/a	1,388

\* "WRS Pension": The WRS is two retirement plans combined, and pays the greater of their two amounts. The "Formula" column results from the WRS benefit formula, which is 1.6% of Final Average Salary times years of service. The "Payable" column is the greater of this or the pension payable under the WRS money purchase plan.

"Alternative 3d" would credit WRS money purchase accounts with all investment return, less 2%, but always crediting at least 3%. The expected average rate would be 7.96%.

# **Electing the Standard ORP**

## Choosing Between the "Standard ORP" and the WRS

*Given the choice of two retirement plans, one a defined contribution (DC) money purchase plan like the "standard optional retirement plan (ORP)" set forth in 1997 Assembly Bill 331, and the other the Wisconsin Retirement System (WRS), most younger university staff employed in the future would choose the DC plan and most employees hired at the oldest ages would choose the WRS. There are several reasons for this:*

- Contributions to defined contribution plans for those young when hired have many years to build up to large accounts that can be used to purchase large pensions at time of retirement -- often larger than pensions defined by the formulas used in defined benefit (DB) plans would produce, given the same employee and the same career history covered by the plan. Those who are older when hired do not have this advantage.
- DC plans are "portable", meaning that the funds accumulated in an employee's account can be transferred into another DC plan if he or she changes employment. Employees can take their retirement money with them when they leave for other jobs elsewhere.

A DC plan's account accumulated during employment with a first employer and then transferred to a successor DC plan will probably achieve a similar final value and buy a similar amount of pension upon retirement as it would have if he or she had remained with the first employer until retiring. Under a typical defined benefit pension plan, the pension earned with a first employer is related by formula to the employee's final average earnings (FAE) during the last three to five years of employment. For those leaving employment many years before they retire, this FAE and the pension it gives them are often much less than would have been the case had the employee remained with that employer until retirement.

Therefore, the same years of service and level of compensation with the employer will not produce as large a pension under most DB plans for employees who leave employment as it will for those of similar age and pay level who do not leave. For those changing jobs in midcareer, the difference in pension amounts is often considerable. The portability of a defined contribution plan automatically solves this problem.

- It is usually easier to "get at one's money" in a DC plan than in a DB plan. Defined contribution plan accounts can under some circumstances be cashed out (generally with tax penalties) and spent on needs other than retirement income. In fact, Congress is said to be concerned that in the United States today less than 50% of the money being accumulated in 401(k) plans is being used for retirement. However, for an employee who needs the capital to buy a first home or send children to college, or for medical needs, a defined contribution account can be a boon.
- The amount of pension payable from a defined benefit plan is guaranteed by the employer sponsoring the plan, while the pension from a defined contribution plan is not guaranteed. Only the amount of contributions made to the DC plan are guaranteed. The amount of pension these contributions ultimately yield will depend on the plan's investment performance over the years. The DB plan's guarantee of pension amounts appeals to employees who are older when hired, and do not have many years left before retiring for their DC plan's account to recover from possible investment losses.

When a newly hired employee must choose between joining a state's defined benefit plan or its optional defined contribution plan, he or she will be given illustrations of the amounts of pension that would likely be earned under either plan. The tables in the preceding section of this report are summary versions of such benefit illustrations. Table B-0 and the graphs that summarize it, printed on pages 26 and 27, represent the kind of information that a newly hired employee would want to consider when deciding which plan to choose.

After examining these, the author decided to assume for the purpose of estimating costs that these percentages of employees hired at each age would elect the standard ORP over the existing version of the WRS: 90% of those hired at age 25, grading (linearly) to 80% hired at age 35, then graded to 60% hired at age 45, graded to 10% of those hired at age 55, and finally graded to 0% hired at age 60. These rates of ORP election appear to be reasonable, based on the information in Table B-0, and they are also in line with experience other states have had with their ORPs, furnished by TIAA-CREF at the author's request. These election rates were used for calculating the lower of the two cost estimates for creating the standard ORP that are printed in the "Costs" section of this report. These rates of election would result in an estimated 71.2% of future university employees choosing to join the standard ORP.

The larger of the two cost estimates was estimated by assuming as a "worst case" scenario that exactly those employees would choose to join the ORP that would cost the WRS money by making that decision. Future employees with ages at hire such that their Entry Age Normal Cost rates were less than 11.443% were assumed to join the ORP. Note that circumstances can be envisioned that would prove more costly to the WRS than this "worst case" scenario, such as greater antiselection leading to more high turnover employees hired at the older ages electing the ORP than anticipated in this study's calculations. However, the higher of the two cost estimates given in this report is for planning purposes a reasonable upper bound on the costs of creating the standard ORP.

The withdrawal rates used for valuations of benefits under the WRS are based on the average behavior observed of employees who have not been given the choice of not joining the WRS. They do not reflect the "antiselection" that would occur if the same group of employees were offered an optional retirement plan that would let them take more money with them if they left their new employment after a few years. For example, it may be that as an average, only 10% of WRS members hired at age 50 will withdraw from employment within five years. However, if the same group is now given the choice of joining the standard ORP, those hired on one year contracts and others with reason to feel they will not stay at the university very long will very likely choose the ORP, even if they are 50 years old when hired. The five year turnover rate observed for those at older ages who choose the ORP will therefore be much higher than the 10% rate for those who are simply in the WRS without having any choice in the matter.

This anticipated antiselection was allowed for in the two estimates made of ORP costs by increasing the WRS withdrawal rates at ages above 35. A linearly increasing scale factor was used, grading from 1.00 at age 35 to 5.00 at age 50. Future experience could prove this to be either too optimistic or too pessimistic, but for the lack of information in this area this method of allowing for antiselection seemed reasonable for purposes of this study.