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OBJECTIVES OF TODAY'S SESSION

- Explain BDO's role
- Understand current situation of the UPR Retirement System
- Gain practical knowledge of retirement benefits concepts to facilitate further discussions
- Describe current actuarial landscape
- Outline possible alternatives
- Next steps

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PROJECT SCOPE

UPR-RETIRO

Situation Statement

UPR requires a comprehensive transformation to address fiscal constrains, but at the same time maintaining the competitiveness from a workforce and academic standpoint. The UPR retirement plan requires significant annual funding. The UPR is covered by PROMESA and FOMB has expressed their preference for closing the Defined Benefit plan and moving to a Defined Contribution model.

A comprehensive analysis is required to safeguard the best interest of all stakeholders to allow for a healthy transformation, balance fiscal health and UPR's competitive proposition to attract talent. Viable alternative options may be developed and presented to the FOMB.

Project Team

Engagement Partner	Sigfredo Velez, CPA
Liaison Partner	Luis Torres Llompart, CPA
Project Manager	David Lugo, CPA
Senior Consultant	Lissette Perez
Process Improvement Engineer	Marisel Robles
Legal Counsel	Francisco Gonzalez, Esq.
Economist	Antonio Rosado, PhD

Core Fundamental Values

- ✓ Evaluate transformational alternatives that may result in a self-sustainable and adequately funded retirement system.
- ✓ Allow for lower financial burden from the UPR in the long-run.
- ✓ Re-formulate the participants' benefits through healthy and favorable alternatives from an actuarial standpoint.



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PROJECT SCOPE

Scope

- Serve as project manager in the discussion, analysis and decision-making process.
- Act as liaison between the UPR's Governing Board (the "Board"), the Board's Retirement Committee (the "Committee"), the UPR Retirement System and the PR Fiscal Agency and Financial Advisory Authority in the matters concerning the UPRs pension and retirement plan.
- Obtain an understanding of:
 - The main provisions governing the UPRs Pension Fund, including its foundation, legal and administrative framework, contributions and funding, cash flows, pension obligations, retirees' and participants' profiles and Plan's operations, among others.
 - The actuarial studies performed to-date and the modeled scenarios.
 - The Pension Fund's financial position as of the most recent date.
 - Action items derived from the UPR's Fiscal Plan dated April 20, 2018.



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PROJECT SCOPE

Scope

- Coordinate necessary meetings with all concerning parties to develop corresponding actions.
- Assist all parties in the understanding of the corresponding financial, economic, actuarial and legal concepts regarding the Pension Fund, transformation requirements and potential alternatives.
- Assist in the preparation of the workplan for the transformation of the retirement system in the context of the Fiscal Plan Implementation.
- Provide periodic status and progress reports to the concerning parties.
- Provide recommendations derived from the discussion and analysis of information.


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AGENDA

- Current Situation
- Foundational Concepts
- UPR Defined Benefit Plan Understanding
- Certified Fiscal Plan and FOMB Expectations
- Actuarial Landscape
- Path Forward
- Next Steps and Takeaway

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OVERALL CHALLENGES OF A COMPLEX LANDSCAPE

What is the correct long-term balance? How much the UPR need to operate?

- PROMESA and FOMB Oversight
- Puerto Rico's Decreasing Population
- Significant reduction in formula revenues
- Long-term UPR's operational and academic goals
- Competitive compensation packages, including retirement

How many students will UPR have?

What courses will be offered?

How many professors are needed?

What is the support staff required for operations?

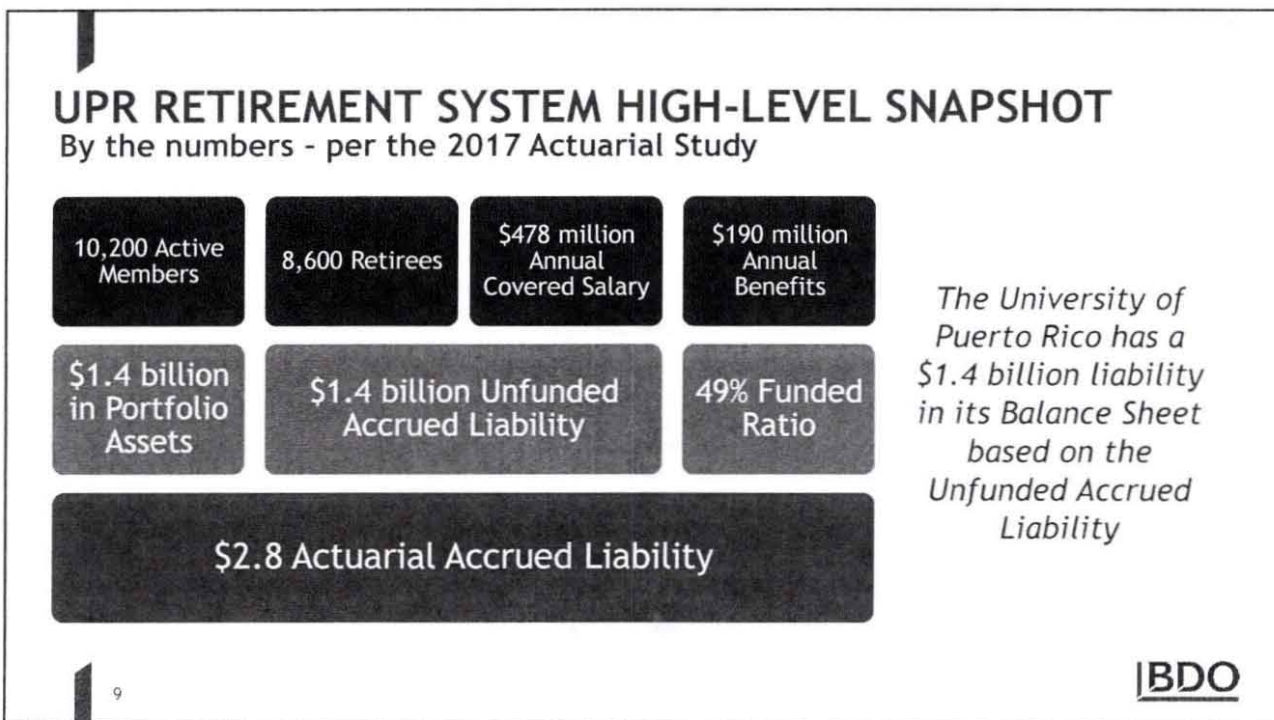
What is a competitive compensation for our resources?

How we will afford this?

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UPR RETIREMENT SYSTEM HIGH-LEVEL SNAPSHOT

UNIVERSITY OF PUERTO RICO
PENSION PLAN
CURRENT PERSPECTIVE

	5-Years Average
Contributions	
University	\$ 84,891,000
Participant	40,650,000
	125,541,000
Pension Payments	(237,922,000)
Negative Cashflow	(112,381,000)
Investment Income	106,576,000
Net Negative Cashflow	\$ (5,805,000)



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RETIREMENT SYSTEM CHALLENGES

Analyze data and make an informed unbiased assessment

- 49% Funding Ratio - requires 51% support from the UPR in the long term
- Funding ratio based on a 7.75% investment return on assets, means that the 49% could be different depending on the future investment return
- On simple terms, using 30 year or 40 year amortization tables, all current actuarial scenarios in the aggregate require average annual contributions of over \$100 million from the UPR as employer to maintain the system solvent (will discuss this in more detail later)
- \$100 million can represent more than 20% of the current UPR employee payroll
- Less employees, less employee contributions, thus more employer contributions required

Conclusions based on 2017 actuarial study and additional scenarios ran by UPR Retirement System actuaries.

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LET'S STOP AND THINK FOR A SECOND

Data is key; Unbiased reasoning; No preconceived notions

- Pension crisis is an ongoing issue locally and in the continental United States
 - All pension issues started by kicking-the-can and optimistic forecasting
- Doing actuarial studies without considering the financial health of the UPR is not an option anymore
- All stakeholders are important
- A lot has been done to maintain a healthy portfolio of assets, but still a required average annual contribution of the University of Puerto Rico of over \$100 million would be required to fully amortize the unfunded actuarial liability
- There is a liability of \$1.4 billion in the Balance Sheet in the most recent UPR audited financial statements (June 30, 2016)
- Is the fiduciary duty of a governance function to assess facts and see alternatives from all possible angles
- Circumstances change: Hurricane Maria, FOMB, Demographics, Compensation Designs

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KEY PLAYERS

Parties in the Administrative and Trust Structures of the UPR's Pension Plan


Participant - The employee who contributes to the Pension Plan, or the retired employee who contributed during his employment and now receives a pension. The participant does not have decision-making powers in the administrative structure of the Pension Plan. However, parties tasked with administrating the Pension Plan have a fiduciary duty to act in the best interests of the participant. With regards to a trust, the participant is the "beneficiary", that is the participant is the party that will benefit from the trust.

Governing Board - The body with decision-making authority over the Pension Plan. It has a fiduciary duty to defend the Pension Plan and act in the best interests of the beneficiaries. The Governing Board appoints the Pension Plan's executive director. With regards to a trust, the Governing Board is the "trustee", that is to say it is given an object in trust to oversee for the benefit of a third party, in this case the participant.

University of Puerto Rico - The employer which offers its employees a Pension Plan, including employer contributions. With regard to a trust, the University is the "settlor", that is it transfers or "settles" employer contributions to the Governing Board for the benefit of the participants.


Executive Director - Employee appointed by the Governing Board and tasked with the day-to-day administration and management of the Pension Plan, under the supervision of, and following the policy established by, the Governing Board.

Retirement Board - A body composed of representatives from most University campuses and/or units, it serves in an advisory capacity to the Governing Board on matters related to the Pension Plan.

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CORE CONCEPTS:

Designing retirement benefits should be aligned to the business needs

- ❑ Retirement benefits is a means of attracting and retaining the employees needed to deliver the goods or services provided by the employer.
- ❑ Different plan designs are better at meeting different workforce needs:
 - ✓ Defined Benefit
 - ✓ Defined Contribution
 - ✓ Hybrid

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DEFINED BENEFIT PLANS

Key Aspects

- ❑ DB plans provide employees with retirement benefits using a predetermined formula, typically based on the participant's salary and years of service at retirement.
- ❑ Although formulas vary widely, a typical retirement benefit is 2% of final average salary times years of service, with salary averaged over the last three to five years of service. Under this formula, the annual benefit for an employee who retired after 20 years of service with a final average salary of \$50,000 would be \$20,000 (i.e., 2% x \$50,000 x 20 years). Employees can, therefore, predict their retirement benefit by approximating how long they intend to work and what they estimate their salary will be at retirement.
- ❑ An employee's right to receive a benefit from a DB plan (i.e., to "vest" in the plan) typically takes 5 years or longer. By contrast, DC plans often have shorter vesting periods, enabling short-term employees to withdraw or rollover their assets when they change employment.

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DEFINED BENEFIT PLANS

Key Aspects

- The promised DB benefit is funded through employer contributions, investment earnings and, for most public sector plans, employee contributions.
- The DB benefit at retirement is usually paid in the form of a monthly annuity (i.e., a series of monthly payments made over the employee's lifetime). However, an increasing number of plans offer a partial lump-sum distribution, where a portion of the member's total accrued benefit is paid in a single distribution, and the remaining annuity is reduced as a result. Many public plans also provide for cost-of-living adjustments (COLAs), early retirement, death, disability and survivor benefits.

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DEFINED CONTRIBUTION PLANS

Key Aspects

- DC plans provide benefits through individual accounts established for each employee.
- In DC plans, the employer contribution made on behalf of each participant is defined, or stipulated, in the plan. Often employees contribute as well, either on a mandatory or voluntary basis (or both).
- Typically, the accounts are managed by an independent, third-party administrator, and employees direct how their accounts are invested among a variety of funds.

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DEFINED CONTRIBUTION PLANS

Key Aspects

- Ultimately, the individual's retirement benefit is determined by accumulated contributions and investment income, less investment management fees and operating expenses.
- At retirement, the benefit may be paid in a lump sum (the most common form of distribution) or as an annuity or as a combination of the two, as permitted by plan design or current tax law.
- Once the employee retires or otherwise leaves employment, the employer is no longer responsible for contributing to or otherwise providing the benefit.

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HYBRID PLANS

Key Aspects

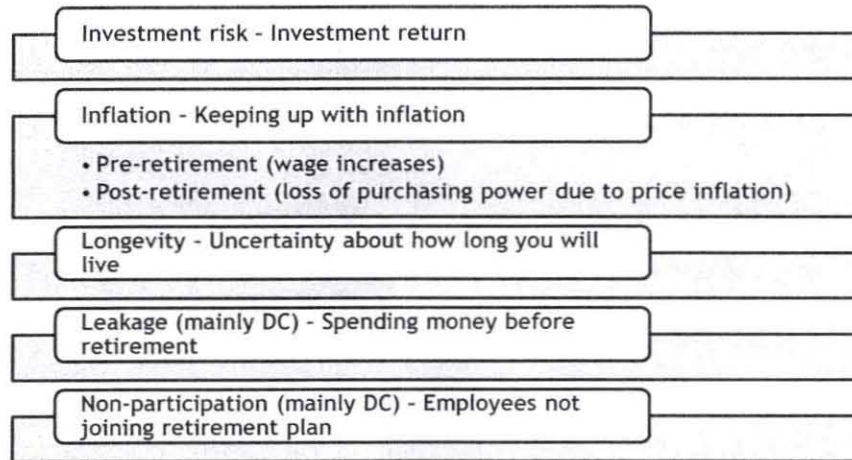
- Hybrid plans combine DB and DC plan features.
- While a change from a pure DB plan shifts a portion of the risks (and potential rewards) to employees, the hybrid approach typically provides a tax-advantaged means for employees to contribute towards their retirement and to invest in diversified funds.
- In addition, when used in the public sector, the hybrid approach typically allows employees to convert their DC accounts to an annuity, which adds to the employees' lifetime benefits.

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RETIREMENT PLAN RISKS



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BENEFIT PLANS: SUMMARY OF EMPLOYEE PERSPECTIVES

Objective	Defined Benefit	Defined Contribution	Hybrid
Benefit Potential	Benefits paid at retirement are for life and are guaranteed by the plan's benefit formula. Cost-of-living increases are common.	Benefits paid at retirement are based on contributions and earnings. The final retirement benefit can be eroded by pre-retirement distributions.	A smaller portion of benefits paid at retirement are for life and guaranteed by the plan's benefit formula. Cost-of-living increases are potentially available.
Understandable Benefits	Benefits require explanation because they are based on a set of variables, e.g., future earnings and years of service at retirement. There are no separate accounts.	Benefits are based on accumulated contributions plus earnings at the time of retirement. Market fluctuations make it difficult to predict retirement benefit.	Understanding benefits will be more complicated. Explanation will involve communication of both the DB and DC portions of the benefit.

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BENEFIT PLANS: SUMMARY OF EMPLOYEE PERSPECTIVES

Continue...

Objective	Defined Benefit	Defined Contribution	Hybrid
Access to Benefits While Employed	Benefits may not be withdrawn while actively employed before normal retirement age. Loans may be allowed, but are rare.	Benefits may be withdrawn or loaned under certain circumstances, provided IRS guidelines are followed, and depending on plan type (e.g., 401(a), 403(b), 401(k) and 457).	Depending on the type of DC plan used, the portion of the benefit held in the DC account will be subject to employee access in the same manner as provided by the IRS.
Rewards for Career Employees	Benefits are typically based on final average salary, rewarding career employees.	Benefits are based on accumulated contributions and earnings, tending to reward all employees equally.	Benefits will provide less reward for career employees than a traditional DB plan, but more than a DC plan.
Portability	Benefits have limited portability.	Benefits are portable.	Benefits are less portable than a DC plan, but more portable than a DB plan.

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BENEFIT PLANS: SUMMARY OF EMPLOYEE PERSPECTIVES

Continue...

Objective	Defined Benefit	Defined Contribution	Hybrid
Expenses	The plan pays administrative and investment fees.	Employee pays administrative and investment fees.	Employee pays the portion of administrative and investment fees attributable to the DC portion.
Investment Risk	Investment risk is assumed by the employer.	Investment risk is assumed by the individual and bears a direct relationship to the retirement benefit.	Investment risk is shared by the employer and employee.

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BENEFIT PLANS: SUMMARY OF EMPLOYER PERSPECTIVES

Objective	Defined Benefit	Defined Contribution	Hybrid
Funding Certainty	Plan liabilities change based on actuarial experience (e.g., future salary increases, investment earnings, employee turnover).	Plan liabilities are fulfilled annually as contributions are made to employee accounts based on a percentage of payroll.	Plan liabilities are reduced to the extent the benefit multiplier is reduced.
Predictable Contribution Costs	Annual contribution may vary from year to year, based on actuarial experience (see above). Rates may be set by statute to increase predictability.	Annual employer contributions are more predictable because they are based on a set percentage of employee salaries or contribution matching.	Annual employer contributions will continue to vary from year to year, but at a lower percent of payroll.
Recruitment Tool	Effective for recruiting and retaining long-term employees.	Effective for recruiting short-term employees. May result in unexpected retention of employees if account assets are insufficient to ensure adequate retirement.	Effectiveness will depend on mix of DB and DC features.

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ACTUARIAL CONCEPTS

Balancing The Equation

$$C + I = B + E$$

- C = Contributions
- I = Investment Income
- B = Benefits Paid
- E = Expenses (administration)

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ACTUARIAL CONCEPTS

Funding Status

Plan Assets (Pension Fund)	Projected Benefit Obligation (PBO)
Fair Value at Start of Year (+) Return on Plan Assets (+) Employer Contributions (-) Benefits Paid (+) Employee Contributions = Fair Value of Plan Assets at end of year	PBO at Start of Year (+) Service Cost (+) Interest Cost (+/-) Actuarial Gain/Loss (+/-) Plan Amendment Gain/Loss (-) Benefits Paid = PBO at end of year

Difference is the funded status of the plan:
Plan Assets > PBO = Overfunded plan
Plan Assets < PBO = Underfunded plan

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PENSION PLAN POLICIES

Three Key Questions

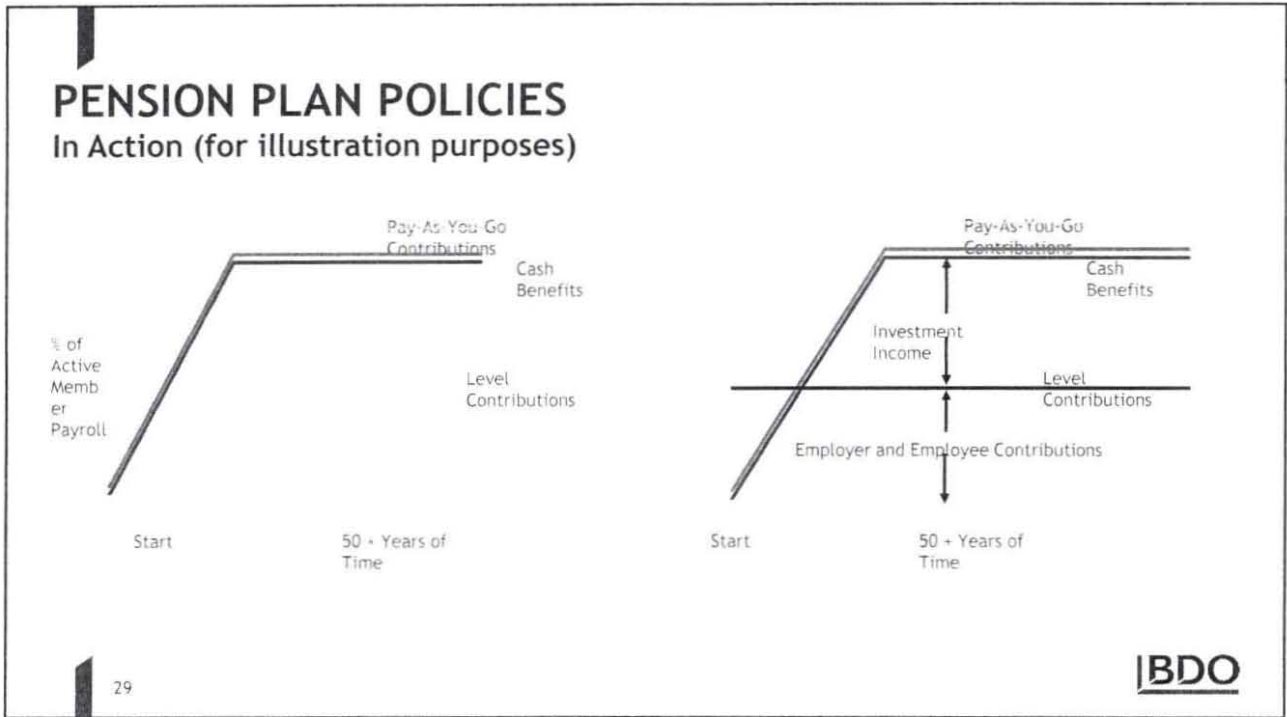
Benefit Policy	How much, when and to whom are benefits paid?
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Investment Policy	What asset classes to invest in and in what proportion?
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Funding Policy	How much and when to contribute?
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PRESENT VALUE CONCEPTS

The present value of an amount of money payable in the future is the amount of money that, if we had it today, would accumulate to the amount that will be payable considering:

- Investment Return
- Probability that money will be paid

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PRESENT VALUE CONCEPTS

Example 1: You owe \$1,000 to a financial institution payable one year from now. You estimate that you can invest money for a 7% return. What is the present value of the debt?

$$\frac{\$1,000}{1.07} = \$934.58$$

Observation: What if you're mistaken about the 7%?

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PRESENT VALUE CONCEPTS

Example 2: You owe \$1,000 to a person payable one year from now. The person is 70 years old. The person has no heirs. You estimate that the chance that the person will be alive to collect the debt is 98%. What is the present value of the debt?

$$\frac{\$1,000}{1.07} \times 98\% = \$915.89$$

Observation: If the person dies before 70, you'll have money left over. If the person lives, you won't have enough to pay the debt.

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PRESENT VALUE CONCEPTS

Example 3: You owe \$1,000 to 100 people one year from now. Each person is 70 years old. You expect the same return (7%) and chance that each person will be alive in one year (98%). What is the present value of the debt?

$$\frac{\$1,000}{1.07} \times 98\% = \$91,589$$

Observation: Under what circumstances will you have exactly enough money to pay the debt?

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ACTUARIAL VALUATION RESULTS

Two Important Contributing Factors

Contribution For	Description
<p>Normal Cost</p>	<p>Every year, an employee “earns” an increasing right on a retirement plan that the plan must meet later on; the normal cost is that certain amount.</p>
<p>Unfunded Actuarial Accrued Liability (UAAL)</p>	<p>The money that a retirement account is obligated to pay out in the future, but does not and will not have the money for, under existing conditions. Thus, the “projected future amount”</p> <p>“Unfunded Liabilities” are a natural part of retirement system funding, comparable to a mortgage on a home but “projected principal” not a “specific principal”.</p> <p>“Funded Ratio” is the percentage of total liabilities funded by current assets.</p> <p>The funded ratio is expected to increase over time as amortization (“mortgage”) payments are made.</p>

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UPR CURRENT RETIREMENT SYSTEM BACKGROUND PLAN DESCRIPTION AND MEMBERSHIP

The University of Puerto Rico Retirement System (the “Retirement System”) is a single-employer, defined benefit pension plan that covers all employees of the University of Puerto Rico (the “University”) with the exception of hourly, temporary, part-time, contract and substitute employees, visiting professors and employees of its blended component unit and discretely presented component units. It is qualified and exempt from Puerto Rico and United States income taxes. The System is not subject to the requirements of the Employees Retirement Income Security Act of 1974 (“ERISA”).

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DEMOGRAPHICS- ACTIVE MEMBERS

As of June 30, 2017

THE NUMBER AND ANNUAL COMPENSATION OF ACTIVE MEMBERS

Number
10,204

Compensation
\$478,529,460

Avg. Compensation
\$46,896

Avg. Age
49.9

Avg. Service
17.8

SCHEDULE OF ACTIVE MEMBER DATA

Age	Completed Years of Service							Total	Payroll
	Under 5	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30+		
Under 20	0	0	0	0	0	0	0	0	0
20 to 24	45	0	0	0	0	0	0	45	664,667
25 to 29	321	32	0	0	0	0	0	353	6,663,239
30 to 34	302	166	55	1	0	0	0	524	14,320,310
35 to 39	278	203	367	115	1	0	0	964	33,719,744
40 to 44	211	200	344	431	148	3	0	1,337	53,218,031
45 to 49	140	135	288	391	440	76	1	1,471	66,170,913
50 to 54	114	108	199	374	451	456	123	1,825	87,933,296
55 to 59	54	76	159	247	405	433	361	1,735	92,071,998
60 to 64	27	25	108	137	197	240	371	1,105	65,918,991
65 to 69	13	13	35	64	81	107	250	563	37,282,749
70+	2	3	15	19	32	33	178	282	20,565,520
Total	1,507	961	1,570	1,779	1,755	1,348	1,284	10,204	478,529,459

Average Active Age: 49.9
Average Service: 17.8

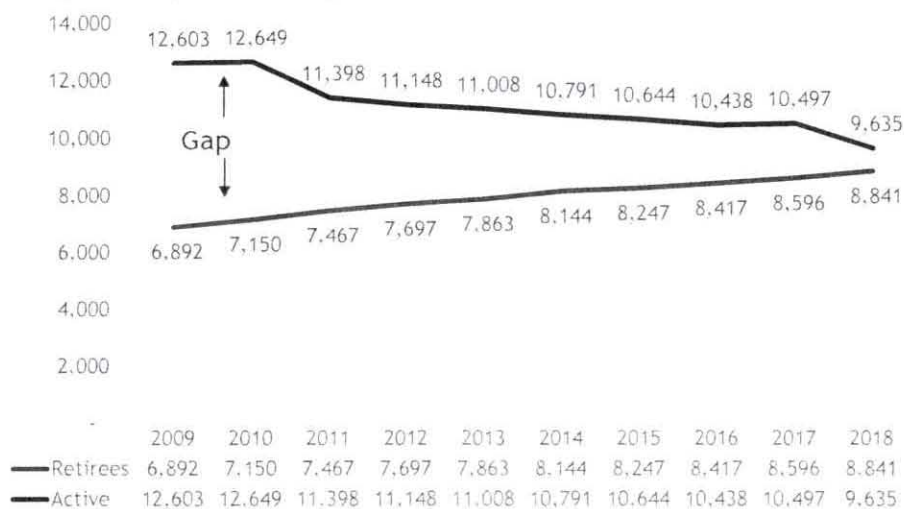


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ACTIVE EMPLOYEES VS. RETIREES

As of June 30, 2018 (unaudited)



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UPR DEFINED BENEFIT PLAN UNDERSTANDING

Basic Concepts- Highlights

Pension by Age and Years of Service	A participant will be eligible to receive a service retirement annuity if he or she has completed 30 years of accredited service, has completed 58 years of age and completed 10 years of accredited service or has reached 55 years of age and completed 25 years of accredited service.
Your Service and Base Pay Determine Your Benefit	The amount of the pension will be determined in accordance with the provisions of the Certification that covers your participation and the cap for which you are contributing. As a general rule, the amount of the service retirement annuity payable to a participant with at least 30 years of service credited and the required age completed (55/58) will be 75% of the average compensation of the 36 highest salaries up to \$69,557.
Types of contribution relationship with social security -COORDINATED	Applies to those who began their participation before January 1, 1990 and did not avail themselves of the Supplementation. A smaller contribution is paid (around 6%) which means that when the 65th birthday is reached, the System will reduce the pension by 1/2% of the average salary multiplied by the years of service credited.
Types of contribution relationship with social security- SUPPLEMENTED	The participant pays a higher contribution (7%, 8%, 9%, 12%) so that when he turns 65, the pension is not reduced. It is mandatory for all who enter from January 1990, etc.

UPR DEFINED BENEFIT PLAN UNDERSTANDING

Benefit Complexity

DISTRIBUTION OF ACTIVE PARTICIPANTS BY PENSION ELIGIBILITY, CONTRIBUTORY MAXIMUM, AND PLAN TYPE

Pension Eligibility Certification	Contributory Maximum Certification	Employee Contribution Wage Base	Plan Type	Participant Count @ 6/30/2017	Participant Count @ 6/30/2016
Cert #7	Cert #7	None	Coordinated	-	-
Cert #55	Cert #55	\$35,000	Coordinated	57	67
Cert #37	Cert #37	\$35,000	Coordinated	653	728
Cert #55	Cert #55	\$35,000	Supplemented	2,054	2,155
Cert #7	Cert #7	None	Supplemented	6	5
Cert #37	Cert #94	\$50,000	Coordinated	69	76
Cert #55	Cert #94	\$50,000	Supplemented	4,420	4,639
Cert #55	Cert #94	\$50,000	Coordinated	37	44
Cert #37	Cert #139*	\$69,557	Coordinated	80	95
Cert #55	Cert #139*	\$69,557	Coordinated	18	21
Cert #55	Cert #139*	\$69,557	Supplemented	2,810	2,608
				10,204	10,438

ADDITIONAL BENEFITS TO THE PENSION

- Christmas bonus \$ 400
- Employer Contribution for Medical Plan \$ 125
- Mortgage Loan
- Tuition Exemption
- Benefits for Death
- Tax Exemption

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CERTIFIED FISCAL PLAN CHALLENGES

✓ Significant reduction in Central Government Appropriations in Baseline figures

From an annualized \$650 million in 2018 to an annualized amount of \$440 million in 2023. 33% reduction.

✓ Reduction in Central Government Appropriations have to be compensated by effective revenue enhancements and cost reduction initiatives

By 2023, an expectation of at least \$300 million is from the revenue enhancements and cost control measures. Subject to execution risks.

✓ For pension plan purposes, the amounts used were part of 40 year plan for amortizing the unfunded liability considering 3% annual active member growth and 7.75% annual interest rate.

Assumptions considered optimistic by FOMB and does not solve long term solvency of the plan

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UPR FISCAL PLAN BASELINE (\$000's)

	FY'18 – Base	FY'18 – Maria Adj	FY'19	FY'20	FY'21	FY'22	FY'23
Total Central Government Appropriations	\$678,321	\$654,868	\$645,909	\$559,874	\$488,850	\$465,861	\$441,861
Total Operating Receipts	\$303,165	\$254,316	\$276,469	\$270,379	\$264,461	\$258,710	\$253,122
Total Intra-Government Receipts	\$285,814	\$242,942	\$285,814	\$285,814	\$285,814	\$285,814	\$285,814
Disaster Relief Receipts							
Insurance Proceeds	-	40,000	40,000	20,000	-	-	-
Total Receipts	\$1,267,300	\$1,192,126	\$1,248,193	\$1,136,067	\$1,039,124	\$1,010,385	\$980,796
Total Operating Disbursements	(\$1,160,063)	(\$1,115,825)	(\$1,151,655)	(\$1,145,629)	(\$1,139,783)	(\$1,134,113)	(\$1,134,113)
Total Disaster-related Disbursements	-	(40,000)	(40,000)	(20,000)	-	-	-
Capital Expenditures	(61,790)	(28,077)	(30,895)	(30,895)	(30,895)	(30,895)	(30,895)
Equipment	(11,553)	(11,553)	(11,553)	(11,553)	(11,553)	(11,553)	(11,553)
Pensions Payment	(\$74,559)	(\$74,559)	(76,376)	(79,598)	(82,570)	(85,108)	(87,744)
Total Disbursements	(\$1,307,965)	(\$1,270,014)	(\$1,310,479)	(\$1,287,675)	(\$1,264,801)	(\$1,261,669)	(\$1,264,305)
Net Operating Surplus/Deficit	(\$40,666)	(\$77,888)	(\$62,287)	(\$151,608)	(\$225,677)	(\$251,284)	(\$283,509)
Contractual Debt Service	(\$48,255)	(\$48,255)	(\$48,256)	(\$48,249)	(\$48,259)	(\$48,252)	(\$48,261)
Reserve/Deficit (Post Contractual Debt Service)	(\$88,921)	(\$126,144)	(\$110,543)	(\$199,856)	(\$273,936)	(\$299,536)	(\$331,769)

Pension payment would represent 20% of Central Government Appropriations by 2023 and 10% of total receipts and do not solve the long-term funding problem of the plan.

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UPR FISCAL PLAN (PENSION DISCLOSURE)

The UPR Retirement System Funding Ratio as of June 30, 2016 was reported as 47.8%. The UPR Governing Board approved a 40 year plan for amortizing the unfunded liability considering 3% annual active member growth and 7.75% annual interest rate. Oversight Board finds that this method is optimistic and back-loaded, not appropriate for ongoing plan, but possibly adequate for frozen plan with no future accruals.

- The Oversight Board is concerned that the UPR FP contribution may not be adequate to maintain solvency, and recommends reductions in benefits but no reduction in total costs due to insolvency risks
- The Oversight Board plan includes a freeze in the pension, and continuation of a Defined Contribution plan similar to those of other Commonwealth plans, but with a 50% match on member contributions of up to 2%
- The Oversight Board plan also includes a reduction in accrued benefits, using the same mechanism as for other plans, but with recognition of the partially funded status of the UPR retirement system

UPR financial summary post measures, \$ in millions

	FY'18	FY'19	FY'20	FY'21	FY'22	FY'23
Baseline Expenditure Valuation as of 06/20/16¹	\$74,559	\$76,376	\$79,598	\$82,570	\$85,108	\$87,744
50% employer match on 2% of contributions	\$0	\$0	(\$4,700)	(\$4,600)	(\$4,600)	(\$4,600)
Savings from reduction in accrued pension benefits	\$0	\$0	\$10,700	\$10,700	\$10,700	\$10,700
Increased Contribution to improve solvency	\$0	\$0	(\$6,000)	(\$6,100)	(\$6,100)	(\$6,100)
Total Pension Cost	\$74,559	\$76,376	\$79,598	\$82,570	\$85,108	\$87,744

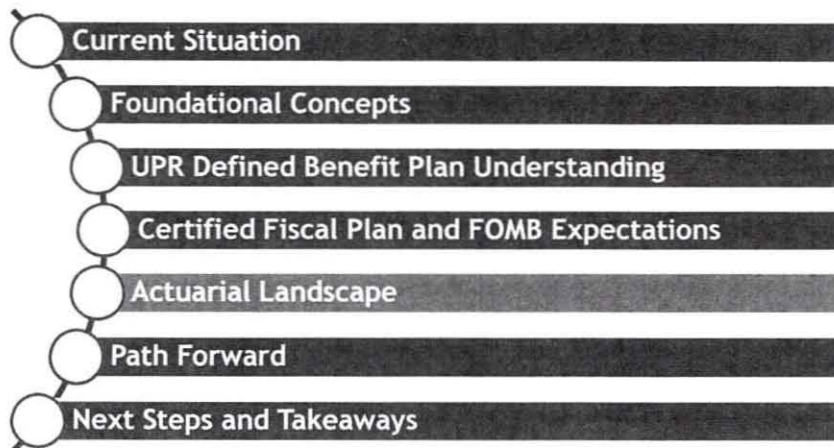
¹ Per Proposed UPR Governing Board Fiscal Plan, assumes 7.75% discount rate and 40 year amortization rate. As indicated on the Fiscal Plan, debt sustainability analysis is creditor agnostic, i.e. it does not take into account the rights and interests of creditors or allocate value of them.

FOMB PLAN PENSION POLICY

- “The Employment Retirement System (ERS) was bankrupted by decades of insufficient funding from government contributions and is currently depleted (less than 1% funded)”.
- “Without PROMESA and the stay it provided, the funds used to pay pensions now would not be available”.
- “FOMB follows a pension policy that protects the lowest income individuals and reduces other pensions progressively, while acknowledging that some reduction in pensions is appropriate and necessary in the bankruptcy process”.

The funding ratio of the UPR Plan may potentially allow for potentially less dramatic reduction in benefits, which may result is smoother transitions. UPR is in favorable position to propose better options than the applicable to ERS, TRS and JRS.

AGENDA



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ACTUARIAL LANDSCAPE

- Latest actuarial study available for the measurement period ended June 30, 2017. Assumptions as of such measurement period are not applicable to current situation.
- Drastic changes not present @ 2017: FOMB, Hurricane María, General Fund's cut, demographic challenges for student enrollment and for future population, etc.
- Updated and recent actuarial studies are very relevant for the comprehensive evaluation.
- Certain limited actuarial scenarios have been prepared by the Retirement Board, but other variables must be considered.
- Actuarial study should consider more conservative or realistic assumptions.

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JUNE 30, 2017 ACTUARIAL VALUATION

Assumptions

2.5% Annual Payroll Growth	7.75% Investments Return	3% Annual Inflation
3.75% Annual Salary Increase	Does Not Consider Accelerated Attrition	UPR is Financially Capable to Cover Future Payment Streams... Even at \$200 MM range

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ACTUARIAL LIABILITY AS OF JUNE 30, 2017

Distribución de Obligación Actuarial Acumulada

19%	62%	19%
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- Jubilados
- Miembros Activos Elegible para Retiro (Activos Elegible)
- Miembros Activos No Elegible para Retiro (Activos No Elegible)

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ACTUARIAL LIABILITY AS OF JUNE 30, 2017

Actuarial Liability Distribution(\$'s Billions)

Retirees	\$1.7	Return @ 7.75%
Vested	\$.5	
Non-vested	<u>\$.5</u>	
Total Actuarial Liability	<u>\$2.8</u>	
Market Value of Assets	<u>\$1.4</u>	
Undfunded Actuarial Liability	\$1.4	Funded Ratio 50%

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UNFUNDED ACTUARIAL LIABILITY

Amortization of actuarial liability under two alternatives

- 40 years since July 1, 2015, with increases in contributions linked to increases assumed in the payroll of 3% annually (Governing Board - Certification # 146)
- 30 years from July 1, 2014, with increases in contributions linked to increases assumed in the payroll from 2.5% to 1% annually (Retirement Board)

Note: Both amortization tables assume payroll increases that are not currently happening. Assumes UPR will pay no matter the amount, even if it represents 40% of its revenues in the long run. Has to be calibrated to current fiscal situation.

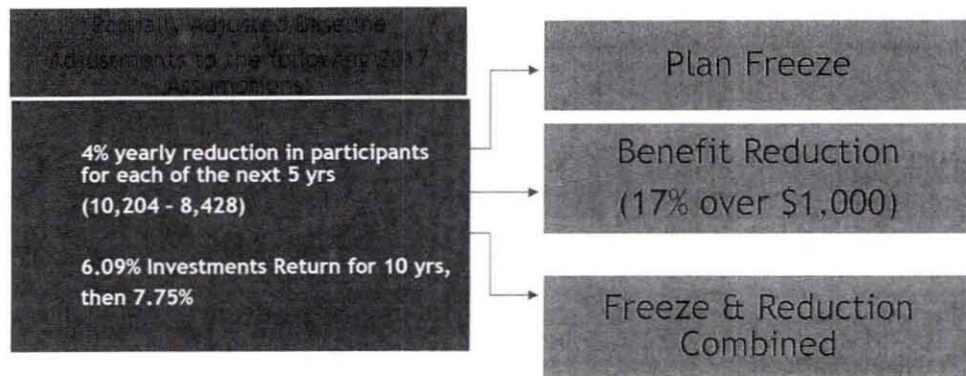
Recommendation: Reassess with June 30, 2018 data, considering UPR latest short, mid and long term assumptions.

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UPDATED SCENARIOS



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BASELINE SCENARIO RESULTS

(\$'s Millions)

Fiscal Plan	40 Years Actuarial Debt Amortization		30 Years Actuarial Debt Amortization	
	UPR Contribution	Funded Ratio	UPR Contribution	Funded Ratio
2020	\$82.9	42%	\$116.9	45%
2025	\$93.4	37%	\$127.1	48%
2030	\$124.7	31%	\$141.9	54%
2035	\$138.6	28%	\$138.3	64%
2040	\$154.0	27%	\$129.3	81%
2045	\$170.7	35%	\$0	100%
2050	\$185.8	59%	\$0	100%
2055	\$168.0	100%	\$0	100%

- Reduction in 'funded ratio' with amortization over 40 years increases insolvency risk for the System if there is a decrease in the financial market.

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PLAN FREEZE

(\$'s Millions)

Fiscal Plan	40 Years Actuarial Debt Amortization		30 Years Actuarial Debt Amortization	
	UPR Contribution	Funded Ratio	UPR Contribution	Funded Ratio
2020	\$84.1	41%	\$119.2	44%
2025	\$99.2	31%	\$134.3	43%
2030	\$137.4	18%	\$156.0	44%
2035	\$158.2	2%	\$159.5	51%
2040	\$213.6	0%	\$158.8	68%
2045	\$176.5	0%	\$4.8	100%
2050	\$137.2	0%	\$5.8	101%
2055	\$99.4	0%	\$6.9	102%

- Increase in contribution compared to current plan for loss of contributions from members.
- With the amortization of the actuarial debt over 40 years, the insolvency of the System for 2035 is projected.

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PENSION REDUCTION TO RETIRED MEMBERS

(\$'s Millions)

Fiscal Plan	40 Years Actuarial Debt Amortization		30 Years Actuarial Debt Amortization	
	UPR Contribution	Funded Ratio	UPR Contribution	Funded Ratio
2020	\$70.7	47%	\$98.9	50%
2025	\$78.7	43%	\$106.6	54%
2030	\$104.3	40%	\$118.0	60%
2035	\$115.0	37%	\$113.7	69%
2040	\$127.0	38%	\$104.6	84%
2045	\$140.0	45%	\$0	101%
2050	\$151.5	66%	\$0	108%
2055	\$133.9	100%	\$0	119%

- It produces a reduction in the contribution of the UPR from \$ 12 to \$ 18 million per year.
- Reduction in 'funded ratio' with amortization over 40 years increases insolvency risk for the System if there is a decrease in the financial market.

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FROZEN PLAN AND REDUCED BENEFITS (COMBINED)

(\$'s Millions)

Fiscal Plan	40 Years Actuarial Debt Amortization		30 Years Actuarial Debt Amortization	
	UPR Contribution	Funded Ratio	UPR Contribution	Funded Ratio
2020	\$71.9	46%	\$101.2	49%
2025	\$84.6	37%	\$113.8	49%
2030	\$117.0	26%	\$132.0	51%
2035	\$134.6	14%	\$134.9	57%
2040	\$204.4	0%	\$134.3	73%
2045	\$171.2	0%	\$4.8	100%
2050	\$134.7	0%	\$5.8	101%
2055	\$98.5	0%	\$6.9	102%

- It produces a reduction in the contribution of the UPR from \$ 11 to \$ 16 million initially, but with amortization of the actuarial debt over 40 years, the insolvency of the System for 2040 is projected.

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CUSTOMIZED INTERNAL (WHAT IF...) SCENARIO

Reduction of UPR Contributions

- Contributions of the UPR in the fiscal years 2018 - 2023 according to the fiscal plan
- Annual contribution of \$ 50 million by the UPR from the fiscal year 2023 until the System is insolvent
- Move to Pay-Go thereafter (inevitable under reduced UPR's contribution scenario)

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ALTERNATE SCENARIO: REDUCED CONTRIBUTIONS

(\$'s Millions)

Fiscal Plan	Current System Without Changes		Frozen Plan, Pension Reduction	
	UPR Contribution	Funded Ratio	UPR Contribution	Funded Ratio
2020	\$79.6	42%	\$79.6	46%
2025	\$50.0	36%	\$50.0	36%
2030	\$50.0	13%	\$50.0	10%
2035	\$272.8	0%	\$224.3	0%
2040	\$263.9	0%	\$204.4	0%
2045	\$240.0	0%	\$171.2	0%
2050	\$216.8	0%	\$134.7	0%
2055	\$203.0	0%	\$98.5	0%

• Under both scenarios, it is projected that the System will be insolvent around fiscal years 2032.

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CALL TO ACTION

- Projected scenarios all point to unsustainable UPR'S contribution model from a financial perspective, based on current financial landscape
- Imperative to reformulate the retirement design from a comprehensive perspective (considering all variables):
 - Graded retirement age changes
 - Capitalization alternatives (lump-sum vs. installments)
 - Increased participant contributions
 - Modify benefits
 - Other formula components (salary cap and pension %)
 - Demographic considerations
 - UPR's compensation model
 - Important to factor-in transition costs

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SCENARIOS CURRENTLY UNDER DEVELOPMENT

Requested By the Retirement System

Increased Retirement Age and Years of Service:

- 62 years of age and 35 years of service
- 62 years of age and 40 years of service

- 65 years of age and 35 years of service
- 65 years of age and 40 years of service

- 68 years of age and 35 years of service
- 68 years of age and 40 years of service

New employees (allow to maintain or increase participants' funding):

- \$3,500 monthly pension cap
- 68 yrs of age and 40 years of service
- 60% - 65% of the highest 60 monthly salaries
- No Christmas bonus

Actuarial Data as of 6/30/2017

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AGENDA

- Current Situation
- Foundational Concepts
- UPR Defined Benefit Plan Understanding
- Certified Fiscal Plan and FOMB Expectations
- Actuarial Landscape
- Path Forward
- Next Steps and Takeaway

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CASE STUDIES - VIRGINIA, COLORADO AND KENTUCKY

Common Causes

- Insufficient employer contributions
- Optimistic valuation assumptions
- Recessionary periods (2008) and fall of the financial market
 - Substantial losses in the value of the assets because of financial underperformance
 - Crisis in state budgets due to recession limited the ability to make full contributions
- Increased in benefits without cost financing considerations

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CASE STUDIES: VIRGINIA

Changes in Benefits

- ✓ **Creation of a hybrid plan for new employees**
 - ✓ Defined benefit with reduced benefit (30% salary with 30 years of service)
 - ✓ Contribution defined with employer contribution
- ✓ **Current and retired employees - reduction of future benefits and reduction in cost of living increase**

Changes in Contributions

- ✓ Installment funding for delinquent sponsor contribution
- ✓ Identification of financing sources for additional contributions

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CASE STUDIES: COLORADO

Two Attempts

2010	2018
<p>Benefits</p> <ul style="list-style-type: none"> Various changes in benefits, including retirement age Increases in pensions suspended for one year and reduction in future increases in pensions for retirees Reduction confirmed by court <p>Contributions</p> <ul style="list-style-type: none"> Increase in contributions by members Gradual increases in employer contributions 	<p>Benefits</p> <ul style="list-style-type: none"> Various changes in benefits, mainly for employees after 2020 Increases in pensions suspended for two years and additional reduction in future increases in pensions for retirees <p>Contributions</p> <ul style="list-style-type: none"> Increase in salary base for contributions from members and employers State special contribution of \$ 225 million Automatic adjustments in individual and employer contributions to amortize actuarial debt in 30 years

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CASE STUDIES: KENTUCKY

Two Attempts

2014	2018
<p>Change in Benefits</p> <ul style="list-style-type: none"> ✓ 'Cash Balance' hybrid plan for new employees as of 2014 (Cash Balance' is a defined benefit plan that looks like a defined contribution plan) ✓ The change to 'Cash Balance' for future employees did not solve the problem in relation to current and retired employees ✓ The main system had 'Funding Ratio' of less than 14% and contribution rate of 83% of salary ✓ Insolvency projected in less than 5 years 	<p>Change in Benefits</p> <ul style="list-style-type: none"> ✓ Various changes in benefits, including reductions to the 'Cash Balance' plan adopted in 2014 ✓ The option of a defined contribution plan <p>Changes in Contributions</p> <ul style="list-style-type: none"> ✓ Increase in contributions from members and employers ✓ Amortization of actuarial debt in 30 years in fixed payments, without assuming increases in payroll ✓ The changes were blocked by the court in June 2018. The changes are pending final resolution in court.

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FOR IMPLEMENTING RETIREMENT BENEFITS TRANSFORMATION

Aligning Perspectives:

- Call for fundamental reform
- Clear communications
- Include all stakeholders
- Stress math, not ideology
- Convey the fact that the problem will not go away

Other Important Considerations:

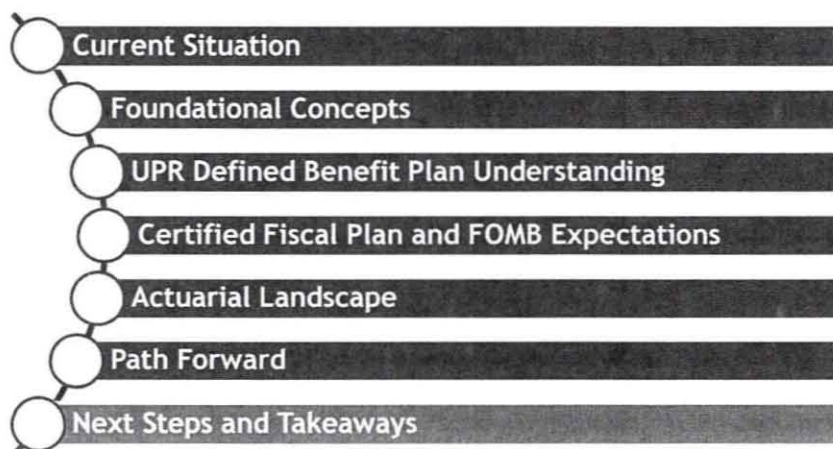
- Policies
- Process
- Platforms
- People
- Admin Considerations
- Transition Costs
- Implementation Timeline

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AGENDA



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TAKEAWAYS

- This is a serious and complex problem
- Doing nothing is not an alternative
- Data driven analysis is necessary; no shortcuts
- All stakeholders are important
- Risks have to be mitigated
- Strategic short, mid and long term perspectives
- Transition costs have to be carefully considered

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NEXT STEPS

- Complete system experience study
- Assess actuarial valuation with June 30, 2018 (By the actuaries of the Retirement System)
 - ✓ Conduct studies based on the 2018 valuation with assumptions from the experience study
- Review assumptions for projections - driven by UPR's strategic plan
 - Projection of System participants
 - Expectation of contributions from the University to the System for the next 15 to 20 years
 - How transition costs would be managed?
 - Contributions from the University to a possible defined contribution plan
 - Anticipated performance for System assets
- Define alternatives to evaluate
 - ✓ Run what-if scenarios based on 2018 baseline data
- Communicate results to all parties

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NEXT STEPS - TIMELINE

TASK	PROJECTED DATE
Receive and evaluate other scenarios requested by the Retirement System	January 2019
Actuaries transition	January 2019
Completion of Experience Study as of 6/30/2018	January 2019
Actuarial Valuation as of 6/30/2018, with JG's revised premises	March 2019
Modeling other scenarios	March 2019

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Q&A



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