THE ACTEX- EDGE FAP STUDY PACKAGE

SAMPLE INTERIM ASSESMENT
Sample Questions and Case Study

The case study begins on page 12.

Questions 1, 2, and 3

Senior management has asked to meet with the Chief Risk Officer (CRO) and you to discuss the company's risk exposures. The CRO has asked you to prepare an internal memo for his review responding to the questions and/or concerns addressed by senior management.

Group retirement financial security system

World Airlines' management is concerned about the risk their defined benefit retirement programs pose to their business operations. The programs are expected to:
- Require an additional $235 million in contributions this fiscal year (resulting in a $385 combined contribution amount)
- Then increase to a required contribution amount of $425 million during the next fiscal year
- Then remain stable at $425 million for the subsequent 4 fiscal years if the plan's actuarial assumptions are met.

You are told that plan obligations are marked-to-market annually, where the actuarial interest rate is set by creating a hypothetical bond portfolio of high-quality corporate bonds whose projected coupon and principal payments match the plan's projected benefit payment stream. The actuarial interest rate is then used to discount the plan's projected benefit stream to generate the plan's liability. Required contributions are directly proportional to the size of the pension deficit.

1) Do the programs pose a risk to World Airlines? Explain why or why not.
2) What are the sources of these risks you described in Question 1?
3) If you feel the programs pose a risk, then what are some potential solutions World Airlines could implement to manage the risk? What do you recommend and why?

Your actuarial staff has provided you the following additional information. (*Note to student, you may wish to paste this into Excel.*)

(Amounts in Millions)

	Projected Benefit Payments	
End of Year	**Hourly Employees Plan**	**Salaried Employees Plan**
1	400	120
2	420	126
3	441	132
4	463	139
5	486	146
6	511	153
7	536	161
8	563	169
9	591	177
10	621	186
11	652	195
12	684	205
13	718	216
14	754	226
15	792	238
16	832	249
17	873	262
18	917	275
19	963	289

Questions 11 – 14

Life insurance financial security system

World Airlines' has been having issues with their self-insured life insurance program *(described in the Case Study)*. When the program began, the premium rate was set such that, if everyone participated in the program at the same multiple of pay, the premiums would equal the expected claims. Since its inception, the program has been consistently experiencing losses, i.e., claims in excess of the premiums. As a result, management has increased premium rates each year in an attempt to bring premiums and claims to parity. However, the losses have only continued to escalate.

You are provided the following most recent plan data, which appear reasonable based on your knowledge of World Airlines. *(Note to student, you may wish to paste this into Excel.)*

Most Recent Grouped Life Insurance Data

Age Range	Count	# Participating	Avg Face Amount	Total Face Amount
21 - 25	10,000	2,000	55,000	110,000,000
26 - 30	6,000	1,500	46,667	70,000,000
31 - 35	9,000	2,000	40,000	80,000,000
36 - 40	11,000	2,000	45,000	90,000,000
41 - 45	13,000	4,000	62,500	250,000,000
46 - 50	14,000	8,000	75,000	600,000,000
51 - 55	13,000	10,000	80,000	800,000,000
56 - 60	14,000	13,000	153,846	2,000,000,000
61 - 64.99	10,000	9,500	105,263	1,000,000,000
Total	**100,000**	**52,000**	**96,154**	**5,000,000,000**

Looking back in your department's files, the only documentation shows that a unisex industry mortality was used for the initial pricing. The weighted average mortality results were then used to develop the group's premium rate. The following are the mortality rates at sample ages (no other ages are provided):

$q_{25} = 0.05\%$ $q_{30} = 0.07\%$ $q_{35} = 0.08\%$ $q_{40} = 0.09\%$ $q_{45} = 0.13\%$ $q_{50} = 0.21\%$
$q_{55} = 0.33\%$ $q_{60} = 0.65\%$ $q_{64} = 1.13\%$

World Airlines' management wants to effectively utilize their life insurance program while minimizing losses. Your department has been assigned the task of analyzing the program and recommending methods to improve it.

For Questions 11 through 14, you have been told that the premium rate for the group is 0.5% in lieu of 0.3% shown in the case study. Thus, you should use 0.5% in your solutions (not 0.3%).

6) Based on the information provided, provide your boss an assessment of why the life insurance program continues to lose money, despite the premium increases.

7) Using the assessment from Question 11, provide your recommended pricing strategy to accomplish World Airlines' objectives.