

STAT 490DS
Homework 8
Fall 2021
November 2, 2021

1. The Tobin Total Care Company has 3000 people who are insured for 2021. Tobin paid 35,000,000 in claims during 2021. Additionally, Tobin expects to pay an additional 1,800,000 on claims that have been reported at the end of the year but have not been paid.

Tobin estimates that claims from Incurred But Not Reported will be 3,200,000.

Kayla, Chief Actuary for Tobin, calculates the monthly premium rate for 2022 based on these claims and the following assumptions:

- i. Healthcare cost trend will be 7%
- ii. Contingency margins on the unpaid claims of 1% for unpaid claims and 4% for IBNR.
- iii. Administrative expenses of 5% of premiums.
- iv. Marketing expenses included commissions of 8% of premium.
- v. Expense to pay the claims is 6% of claims.

Tobin's profit objective is 4.5%.

Calculate the monthly premium that Tobin should charge in 2022.

2. You are given the following 2020 claim information for Marg Medical Assurance Company:

Month Incurred	Month Paid			
	Month 0	Month 1	Month 2	Month 3
January	500,000	1,100,000	490,000	30,000
February	380,000	1,200,000	380,000	25,000
March	345,000	1,250,000	385,000	35,000
April	340,000	1,300,000	415,000	25,000
May	450,000	1,277,000	440,000	15,000
June	430,000	1,500,000	340,000	25,000
July	460,000	1,480,000	375,000	25,000
August	490,000	1,400,000	390,000	35,000
September	400,000	1,260,000	415,000	20,000
October	470,000	1,400,000	415,000	
November	370,000	1,300,000		
December	475,000			
Column Total	5,110,000	14,467,000	4,045,000	235,000

Emma, Chief Actuary for Marg, calculates the monthly premium rate for 2021 based on these claims and the following assumptions:

- i. Marg insures 2000 policyholders.
- ii. Marg has 1,000,000 of claims that have been reported but not paid. Emma believes that Marg will pay 85% of these claims.
- iii. Healthcare cost trend will be 15%
- iv. Contingency margins on the unpaid claims of 2% for unpaid claims and 5% for IBNR.
- v. Administrative expenses of 6% of premiums.
- vi. Marketing expenses included commissions of 4% of premium.
- vii. Expense to pay the claims is 7% of claims.

Tobin's profit objective is 6.2%.

Calculate the monthly premium that Marg should charge in 2021.