

The background is a light blue gradient with several realistic water droplets of various sizes scattered across it. The droplets have highlights and shadows, giving them a three-dimensional appearance.

# **SAFETY SEDAN: A PRICING CASE STUDY**

FACTOR

MAY 13, 2016

# GOALS

- **LEARN ACTUARIAL CONCEPTS**
- **ENGAGE IN SUCCESSFUL TEAMWORK**
- **HAVE SOME FUN!**

## BASIC FORMULAS

- **LOSS RATIO** = LOSSES / PREMIUM
- **EXPENSE RATIO** = EXPENSES / PREMIUM
- **COMBINED RATIO** = (LOSSES + EXPENSES) / PREMIUM = LOSS RATIO + EXPENSE RATIO
- **UNDERWRITING PROFIT** = 100% – COMBINED RATIO

# BASIC FORMULAS - EXAMPLE

Given:

- Loss Ratio = 70% (ratios may be expressed as a % or a decimal; either is correct)
- Expense Ratio = 25%

Calculate:

- Combined Ratio = 95% i.e. 95% of premium is used to pay losses & expenses.
- Underwriting Profit = 5% i.e. After paying losses & expenses, the company has 5% of premium left over for profit.

- **LOSS RATIO** = LOSSES / PREMIUM      **EXPENSE RATIO** = EXPENSES / PREMIUM
- **COMBINED RATIO** = (LOSSES + EXPENSES) / PREMIUM = LOSS RATIO + EXPENSE RATIO
- **UNDERWRITING PROFIT** = 100% – COMBINED RATIO

## **OTHER IMPORTANT TERMS:**

**EXPOSURES** ARE THE BASIC UNIT OF RISK UNDERLYING INSURANCE PREMIUM (I.E. THE NUMBER OF RISKS BEING INSURED).

- FOR AUTO INSURANCE, THE EXPOSURE BASE IS # OF AUTOS.
- FOR HOMEOWNERS INSURANCE, THE EXPOSURE BASE IS # OF HOMES.

## OTHER IMPORTANT TERMS: (CONTINUED)

MANY INSURANCE POLICIES ARE PRICED USING **CLASSIFICATION (CLASS) PLANS OR RATING PLANS.**

- THE CLASS PLAN BEGINS WITH A **BASE RATE** WHICH IS SIMILAR TO AN OVERALL AVERAGE RATE FOR ALL RISKS. THEN CLASS RELATIVITIES ARE APPLIED TO THE BASE RATE TO MODIFY THE RATE FOR INDIVIDUAL RISK CHARACTERISTICS. E.G. YOUTHFUL DRIVERS HAVE A CLASS RELATIVITY GREATER THAN 1.00 TO INCREASE THE PREMIUM ABOVE THE BASE RATE. MATURE DRIVERS HAVE A RELATIVITY LESS THAN 1.00 TO DECREASE THE PREMIUM BELOW THE BASE RATE.
- **PREMIUM** = BASE RATE X CLASS RELATIVITY X # EXPOSURES

## **OTHER IMPORTANT TERMS: (CONTINUED)**

**TREND** IS THE UPWARD OR DOWNWARD PATTERN EXHIBITED BY DATA OVER TIME.

E.G. INFLATION GENERALLY CAUSES LOSSES TO INCREASE OVER TIME.

### **% CHANGE (MULTIPLICATIVE) VS. POINTS OF CHANGE (ADDITIVE)**

- E.G. GIVEN A FACTOR OF 0.50, A 10% INCREASE WOULD RESULT IN A NEW FACTOR OF 0.55.
- E.G. GIVEN A FACTOR OF 0.50, A 10 POINT INCREASE WOULD RESULT IN A NEW FACTOR OF 0.60.