

## Pricing Model Report That Details

### Key Responsibilities of an Actuarial Analyst

As an actuarial analyst in the general insurance sector, there are several key responsibilities that are essential to maintaining the financial health and stability of an insurance company. These responsibilities include:

#### 1 Risk Assessment

- Analyze historical data to identify potential risks.
- Apply statistical models to forecast the frequency and severity of future claims.
- Support underwriting decisions by quantifying exposures such as natural disasters, accidents, or liability events.

#### 2 Pricing (Ratemaking)

- Develop insurance premiums using actuarial methods such as experience-based rating.
- Ensure premiums are competitive while sufficient to cover expected claims, expenses, and profit margins.
- Adjust pricing models for inflation, emerging risks, and market conditions.

#### 3 Reserving

- Estimate reserves for reported but unsettled claims (RBNS) and claims incurred but not reported (IBNR).
- Ensure adequate financial provisions are maintained to meet future policyholder obligations.

#### 4 Financial Reporting

- Produce regular reports on claims experience, loss ratios, and reserve adequacy.
- Provide management insights to guide strategic decisions on pricing, underwriting, and product development.

#### 5 Regulatory Compliance

- Ensure pricing and reserving practices comply with local and international insurance regulations.
- Stay updated on evolving regulatory standards.

- Provide transparent documentation of methods and assumptions for regulatory review.

## Basics of Marine Insurance, with a Focus on Marine Third-Party Liability

### 1 Overview of Marine Insurance

Marine insurance protects ships, cargo, freight, terminals, and related assets involved in maritime transport. It is a cornerstone of international trade, safeguarding stakeholders against risks that may occur during sea voyages.

### 2 Common Marine Insurance Perils

- Sinking – Loss of vessel due to severe weather or structural failure.
- Collision – Damage from striking other ships, docks, or underwater hazards.
- Piracy – Theft, hijacking, or violence at sea.
- Fire – Accidents or external causes resulting in onboard fire.
- Severe weather – Storms, hurricanes, or typhoons damaging ships or cargo.

### 3 Types of Marine Insurance Coverages

- Hull Insurance – Protects the ship's physical structure and machinery.
- Cargo Insurance – Covers goods being transported, including during loading and unloading.
- Freight Insurance – Compensates shipowners/charterers for lost earnings if cargo is lost or damaged.
- Protection and Indemnity (P&I) Insurance – Provides coverage for third-party liabilities.

### 4 Marine Third-Party Liability

- Part of P&I insurance, Marine Third-Party Liability is particularly important for insurers and shipowners. It covers:
- Bodily injury or death of passengers, crew, or third parties.
- Property damage to other vessels, docks, or infrastructure caused by the insured vessel.
- Pollution liability, including costs of oil spills and environmental damage.
- Wreck removal, ensuring costs of clearing sunken or damaged vessels are covered.

## Outline for Pricing Analyses for Marine Liability Business

The pricing of Marine Liability insurance requires a structured, experience-based approach:

### Step 1: Data Collection

- Gather historical claims data, policy details, and exposure measures (e.g., fleet size, tonnage, trading routes).
- Include external data such as inflation rates, industry trends, and regulatory updates.

#### Step 2: Data Cleaning and Preparation

- Validate dataset accuracy and completeness.
- Remove anomalies and outliers.
- Adjust past claims for inflation and changes in exposure to make them comparable.

#### Step 3: Risk Assessment

- Analyze claim frequency (number of claims per exposure unit).
- Assess severity distribution (average cost per claim, catastrophic events).
- Identify risk drivers (vessel type, cargo, routes, weather conditions).

#### Step 4: Rate Calculation

- Calculate the Expected Loss Cost (ELC) = Total Claims / Total Exposure.
- Add loadings for expenses, profit, and risk margin.
- Adjust for policy-specific features (limits, deductibles, endorsements).

#### Step 5: Validation and Testing

- Compare results with industry benchmarks and peer data.
- Conduct stress tests for extreme but plausible events.
- Refine assumptions and methods as necessary.

#### Step 6: Documentation and Reporting

- Prepare a comprehensive report outlining methodology, assumptions, and final rates.
- Include commentary on risks, uncertainties, and data limitations.
- Present recommendations to management and clients in clear, actionable terms.

## Conclusion

This report establishes a foundation for developing a detailed pricing model for Marine Liability insurance. By combining actuarial responsibilities with an understanding of Marine Third-Party Liability and structured pricing analysis, the Specialty Lines Actuarial team can deliver competitive yet sustainable solutions for clients such as Oceanic Shipping Co.