

# Here's the comprehensive premium calculation system I've implemented:

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## Commercial Vehicle Insurance Premium Calculator

### Revenue Model Overview

Component	Rate	Purpose
<b>Truck Base Rate</b>	4.5% of value	Higher risk (mechanical, driver error)
<b>Trailer Base Rate</b>	2.5% of value	Lower risk (no engine, towed)
<b>Admin Fee</b>	R350 flat	Covers policy administration costs
<b>SASRIA Levy</b>	0.025%	Mandatory SA insurance levy
<b>Minimum Premium</b>	R2,500/year	Ensures profitability on small policies

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### Risk-Based Adjustments (Profit Levers)

#### 1 Vehicle Age Multiplier

Age	Multiplier	Rationale
0-2 years	0.90 (10% off)	New = safer, easy parts
3-5 years	0.95 (5% off)	Still reliable
6-8 years	1.00 (standard)	Baseline
9-12 years	1.15 (+15%)	Aging, more claims
13-15 years	1.30 (+30%)	High risk
15+ years	1.50 (+50%)	Very high risk

#### 2 Fleet Size Discount (encourages larger policies)

Fleet Size	Discount
20+ vehicles	20% off
10-19 vehicles	12% off
5-9 vehicles	8% off
3-4 vehicles	5% off

### 3 Ownership Status

- **Owned:** Standard rate
- **Rented:** +15% loading (operators may be less careful)

### 4 Business Type Risk Loading

Industry	Loading	Why
Hazmat/Chemical/Fuel	+35%	High liability exposure
Mining/Construction	+25%	Harsh conditions
Long Haul/Cross Border	+20%	More road time, theft risk
Refrigerated/Cold Chain	+15%	Cargo sensitivity
Local Distribution	-5%	Lower exposure

### Example Calculation

For a **transport company** with:

- 2 Trucks: R800,000 each (2022 models)
- 1 Trailer: R200,000 (2020 model)
- Owned vehicles, Local distribution

TRUCKS:

$$R800,000 \times 4.5\% \times 0.95 \text{ (age)} \times 1.0 \text{ (owned)} \times 0.95 \text{ (local)} \times 0.95 \text{ (fleet)} = R30,780$$

$\times 2 \text{ trucks} = R61,560$

TRAILER:

$R200,000 \times 2.5\% \times 1.0 \text{ (age)} \times 1.0 \text{ (owned)} \times 0.95 \text{ (local)} \times 0.95 \text{ (fleet)} = R4,513$

SASRIA:  $R1,800,000 \times 0.025\% = R450$

ADMIN FEE: R350

TOTAL ANNUAL: R66,873 (3.72% effective rate)

MONTHLY: R5,573

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## Profit Margins

- **Target Loss Ratio:** 60-65% (claims paid vs premiums collected)
- **Expected Gross Margin:** 15-25%
- **Minimum premium** ensures small policies don't lose money
- **Fleet discounts** are offset by volume - more policies, less admin per policy