Rate Making under Accepted Actuarial Practice and Claims Forecasting

Cara Low, Vice President & Chief Actuary & Risk Officer

Khurram Masud, Director, Pricing

Cherity Ostapowich, Director, Valuation & Capital Management

2023 General Rate Application

MANITOBA PUBLIC INSURANCE

Agenda

- Evolution of the Actuarial Function (Cara Low)
- Ratemaking under Accepted Actuarial Practice (Khurram Masud)
- Claims Forecasting (Cherity Ostapowich)

Actuarial Evolution

About Cara Low, Vice President & Chief Actuary & Risk Officer

- Joined MPI in September 2021
- Responsible for the strategic leadership of the corporation's Actuarial, Investment and Risk Division
- Brings over 30 years of experience as an actuarial and senior leader at several insurers
- First in house actuary at SGI, started in 2003, and built the actuarial department
- Holds a Bachelor of Science with a major in Actuarial Mathematics from the University of Manitoba
- Qualified actuary: Fellow of the Casualty Actuarial Society (FCAS), Fellow of the Canadian Institute of Actuaries (FCIA), Member of the American Academy of Actuaries (MAAA)
- Chartered Financial Analyst (CFA), Fellow Chartered Insurance Professional (FCIP) and a Certified Risk Manager (CRM)
- Have a deep understanding of property and casualty insurance in Canada

Understanding MPI's Actuarial History

- Previously, institutional knowledge and the actuarial function at MPI was held solely by the Vice President and Chief Actuary
- With departures from the organization, the need to build a strong, diverse and skilled actuarial team was evident
- Significant progress has been made to create the most effective organizational structure, build actuarial practices and capabilities and recruit the right people to meet MPI's needs
- Over the past year, MPI has moved from one to four qualified actuaries - Chief Actuary and three Directors
- As MPI looks to adopt more industry best practices, building an experienced team with the right organizational structure is crucial to achieving success

MPI's Actuarial, Investments and Risk Division

Cara Low
Vice President & Chief Actuary & Chief Risk Officer

Christine Zhou
Director, Business Insights & Analytics

Khurram Masud
Director, Pricing

Cherity Ostapowich
Director, Valuation & Capital Management

Business Insights & Analytics

About the directorate:

- Focused on centralizing a regular reporting cadence for MPI's Executive Team and Board of Directors as well as other areas of the organization on a variety of topics
- Delivers details on reporting and forecasting for claims, premium and exposures for all lines of business
- Provides consistency both internally and externally but also the additional context needed to understand what these figures mean for our business now and into the future

Pricing

About the directorate:

- Responsible for robust ratemaking and rate modelling of the Corporation’s three lines of business:
    - Basic: Universal compulsory coverage for personal and some commercial vehicles
    - Extension: Optional coverages for personal vehicles in competition with other insurers
    - Special Risk Extension (SRE): commercial lines and specialized products that are not offered in Basic and Extension.

Valuation & Capital Management

About the directorate:

- Oversees the Corporation’s Capital Management strategy
- Responsible for preparing financial forecasts, disseminating the corporate financial forecast for the annual Public Utilities Board rate application, senior management and executive leadership team as well as valuing the Corporation’s policy liabilities
- Ensures the adequacy of reinsurance coverage and performing financial condition testing

Benefits to an Expanded Actuarial Function

- More sophistication in pricing approaches, including Generalized Linear Modelling
- More and quicker insight into operational results and trends (data driven organization)
- More capacity to provide more detailed information when required, including during PUB hearings
- Successful IFRS 17 implementation
- Continued success of the Asset Liability Management function
- Increased oversight of pricing risk, reserving risk, inflation risk, catastrophe risk and reinsurance risk
- Support to ensure successful NOVA delivery as pricing models are built into the new system

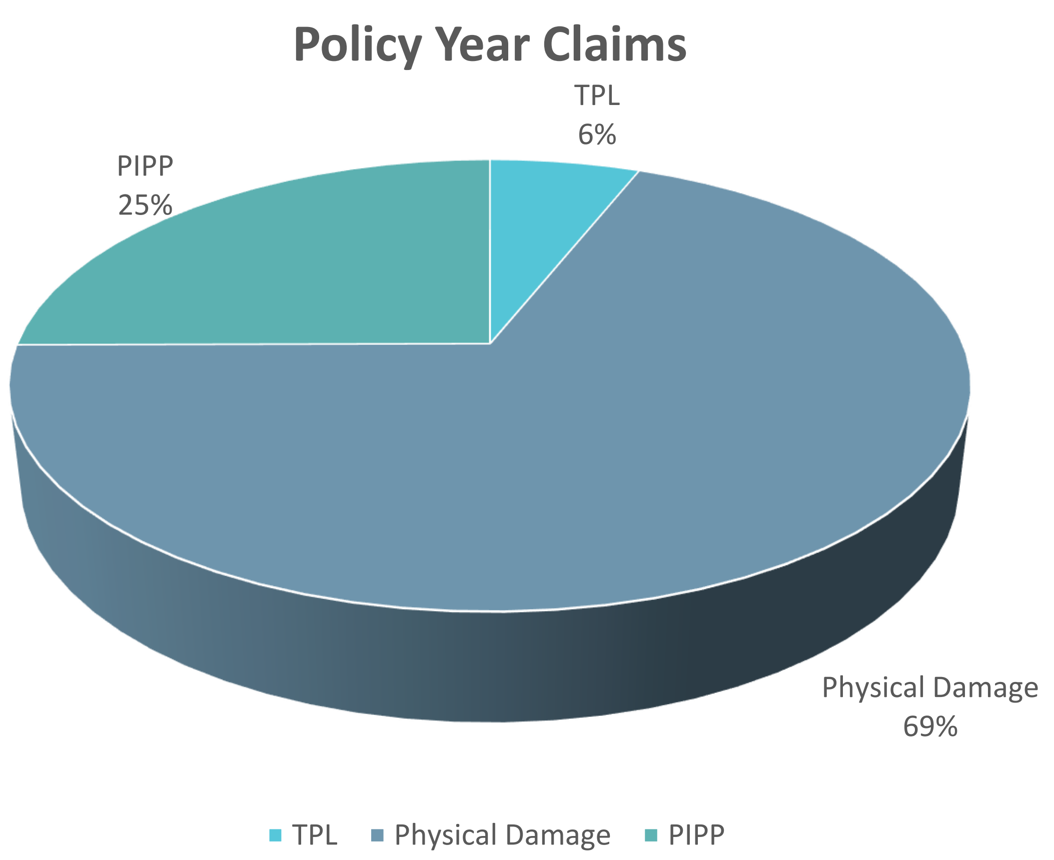
Building a strong actuarial team is important to ensure continued financial integrity and rate stability for Manitobans.

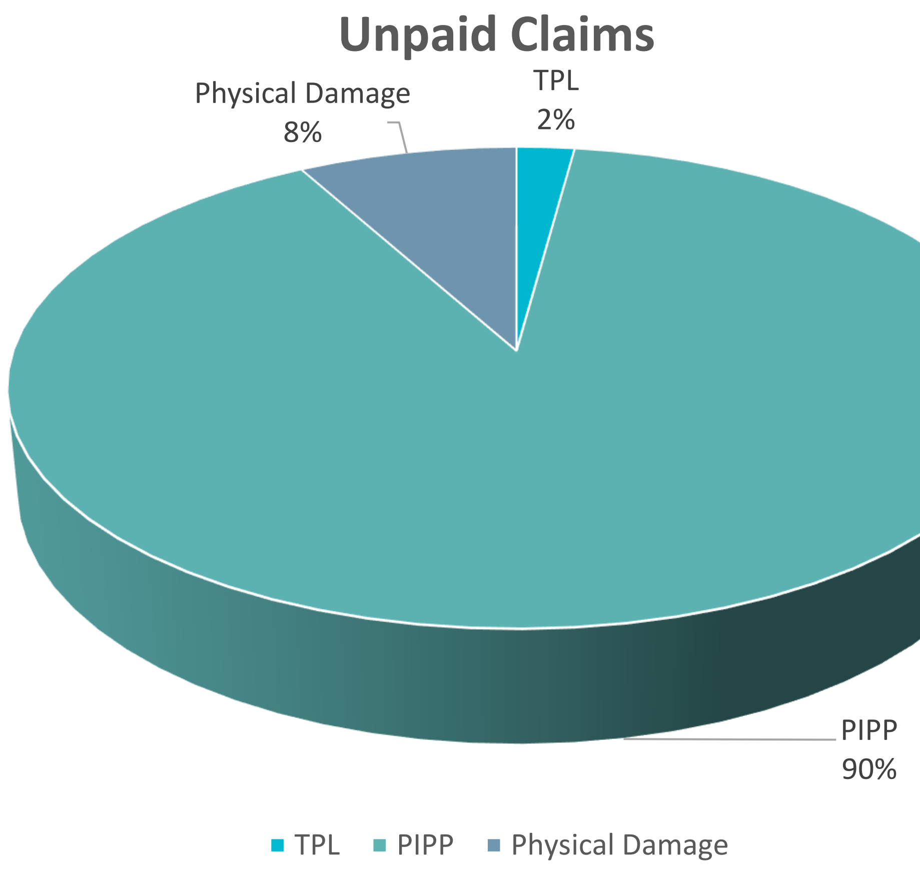
Ratemaking under AAP

Basic Rates

- The Basic ratemaking methodology is proven and stable over time
- Required rates are determined on a breakeven basis so no profit provision
- Ratemaking methodology meets Accepted Actuarial Practice
- Current rating methodology for risk classification : Minimum Bias Procedure (MBP)
- Intention to move to Generalized Linear Model (GLM)
  - Plan to file a transition plan for private passenger vehicles in the 2025 GRA
  - Other major classes to follow in the 2026 GRA
- DSR scale expanded to DSR level 17
- *New –Money Yield calculated based on duration of Premium Duration and net of investment expenses

Methodology Change – Duration





Methodology Change – Duration

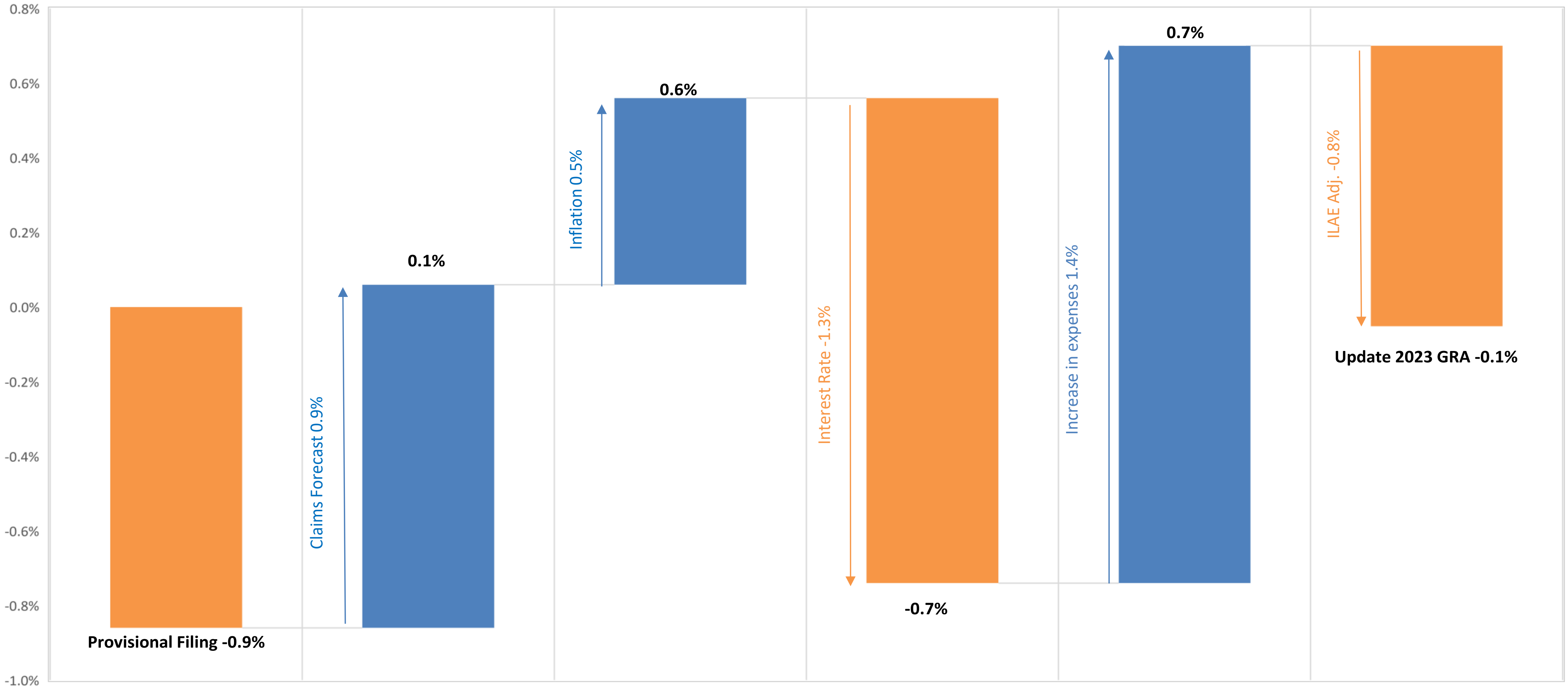
- Canadian Institute of Actuaries Standards of Practice on Ratemaking: Property and Casualty Insurance (SOP 2620.15)
  - *The investment return rate for calculating the present value of cash flows would reflect the investment income to be earned on assets that might be acquired with the net cash flows resulting from the revenue at the indicated rate.*

- Impact of Change in Duration of +0.2%
  - Overall basic indication using claims liability duration: -0.3%
  - Overall basic indication using premium liability duration: -0.1%

Main Assumptions

- 5% reduction in claims frequency due to WFH assumption
  - Weekly indemnity
  - ABO-Indexed
  - Collision
  - Property Damage
- Increase in claims severity due to change in inflation and supply chain issues
- Increase in indexation for PIPP benefits due to increase in Manitoba CPI
- Investment yield of 4.05%

Rate Change – Original vs Updated



Breakeven Rate Indication – Contributing Factors

2023/24 Basic Rate Indication

Required Rate*	0.6%
Natural Upgrade	-0.7%
Breakeven Required Rate Change	**-0.1%**

*Contributing factors to the required rate increase of 0.6% from 2022 GRA:

- Claims Costs (incl. Claims Exp.) = +1.6%
- Increase in New Money Yield (4.05% net of exp)= -4.1%
- Increase in Operating Expense (initiative expenses) = +1.6%
- Increase in Commission (higher commission rate) = +0.7%
- Decrease in Driver Premium (greater movement up the DSR scale) = +0.2%
- All Other Expenses = +0.6%

0.1% Overall Required Rate Decrease

- Table shows required rate changes by major class based on snapshot population of vehicles as of November 1, 2021
- Includes changes to the vehicle premium discounts for DSR levels +9 to +17

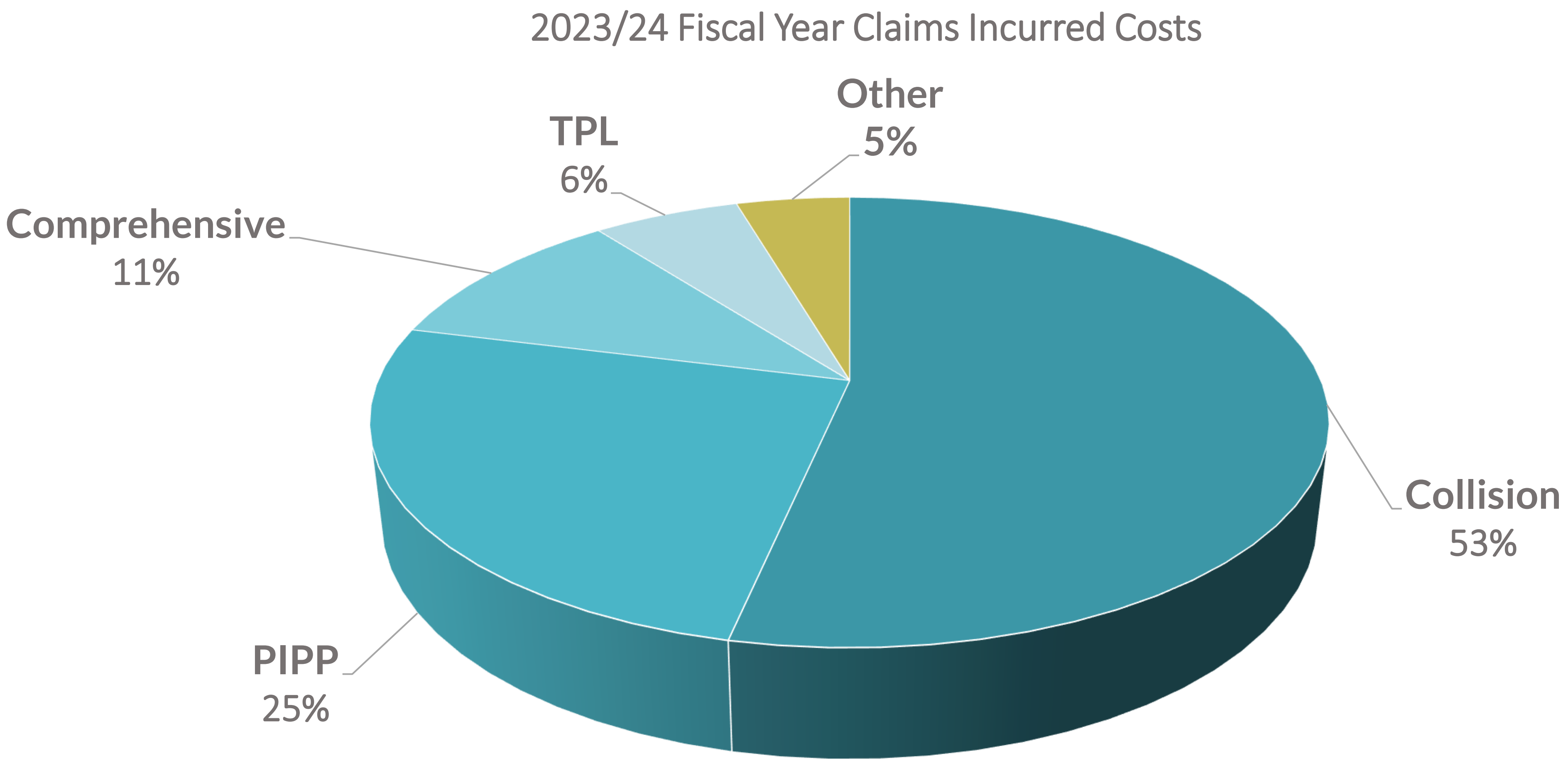
Major Class	Current Average Rate	Proposed Average Rate	Proposed Rate Change
Private Passenger	$1,170	$1,175	0.4%
Commercial	$890	$933	4.8%
Public	$2,236	$2,285	2.2%
Motorcycles	$908	$936	3.0%
Trailers	$69	$63	-9.2%
Off-Road Vehicles	$6	$6	0.0%
Overall	$888	$892	0.5%
DSR Scale Movement			-0.6%
Overall including DSR Scale Movement			-0.1%

0.1% Overall Required Rate Decrease – Continued

- 0.5% overall rate increase is based on a snapshot population of vehicles as of November 1, 2021
- A further 0.6% overall rate reduction is expected by rating year 2023/24 from changes to the distribution of vehicles by DSR level:
- The total impact of both the 0.5% and -0.6% is the 2023/24 breakeven overall required rate decrease of -0.1%

Claims Forecasting

Basic Fiscal Year Claims Incurred Composition

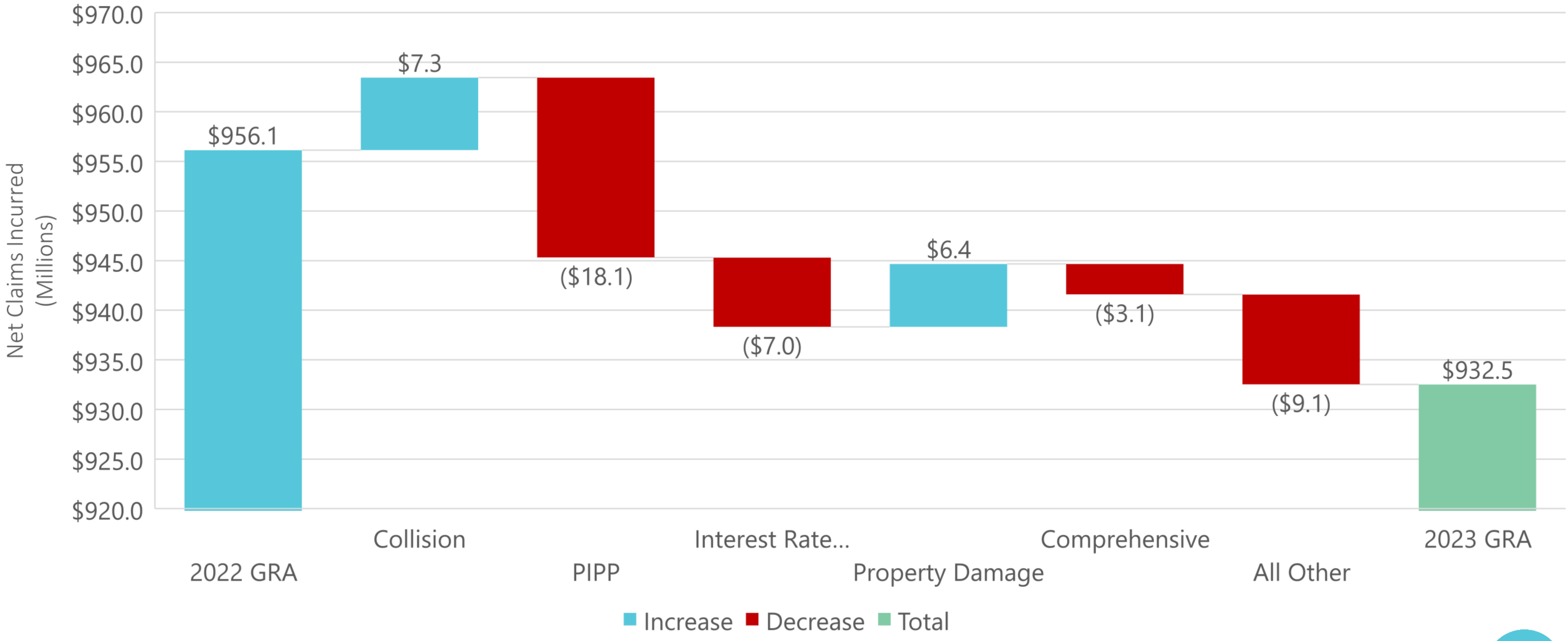


Comparative of Basic Claims Incurred – 2023 vs 2022 GRA

The largest variance from the 2022 GRA is from fiscal year 2021/22 where claims incurred were $150M lower driven by rising interest rates.

Fiscal Year	2023 GRA	2022 GRA	Variance to 2022 GRA
($ millions)			
2021/22	$705.8	$855.8	($150.1)
2022/23	$883.0	$916.6	($33.6)
2023/24	$932.5	$956.1	($23.6)
2024/25	$975.2	$1,001.3	($26.1)
2025/26	$1,019.4	$1,041.0	($21.5)

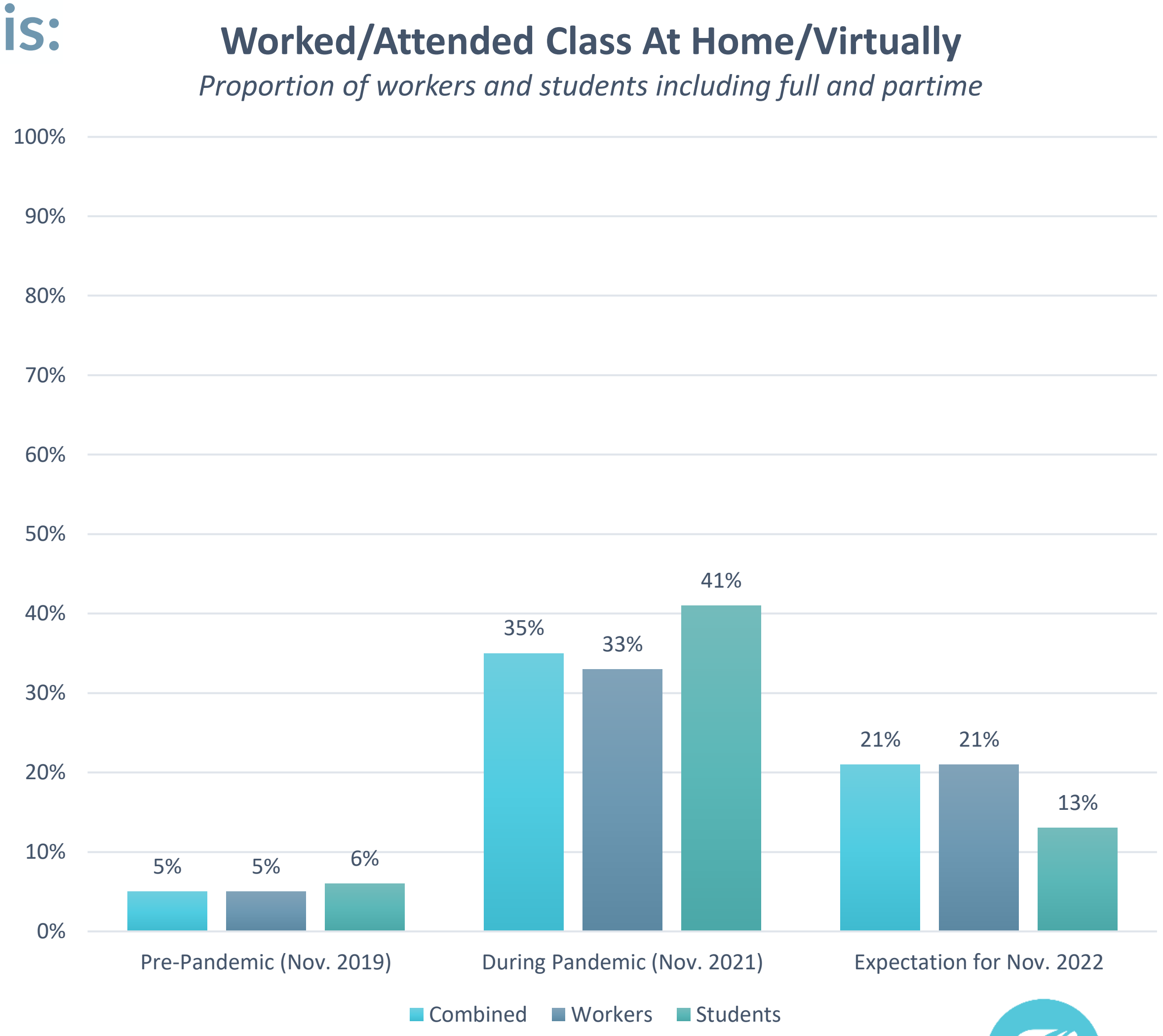
2023/24 Variance from 2022 GRA Forecast



Working from Home Assumption

Assumptions based on the following analysis:

- February 2022 – Conducted a survey of Manitobans on how the pandemic affected how they commute. (Attachment A – Driving Behaviour Survey Results Summary)
- Survey indicated that a significant portion of Manitobans worked from home in November 2021.
- Of those working from home, approximately half expected to work from home in November 2022.
- Collision frequency in 2021/22 was approximately 10% below pre-COVID
- From 2022/23 and on, the Working from Home impact to frequency was estimated at half of the 10% so 5%.
- Applied to Collision, Property Damage, Weekly Indemnity, and ABO-Indexed frequency.



Inflation Assumption

- As at March 31, 2022, the inflation assumption in the valuation was revised to reflect higher inflationary environment in Manitoba. This resulted in $64M increase to claim liabilities.

- In the rate update, the higher inflation assumption has resulted in $14 million increased PIPP claims costs per year

Insurance Year	2022 GRA	2023 GRA	2023 GRA Rate Update
2022/23	2.00%	3.30%	3.30%
2023/24	2.00%	4.20%	7.60%
2024/25	2.00%	2.40%	3.70%
2025/26	2.00%	2.30%	2.50%
2026/27	2.00%	2.00%	2.00%

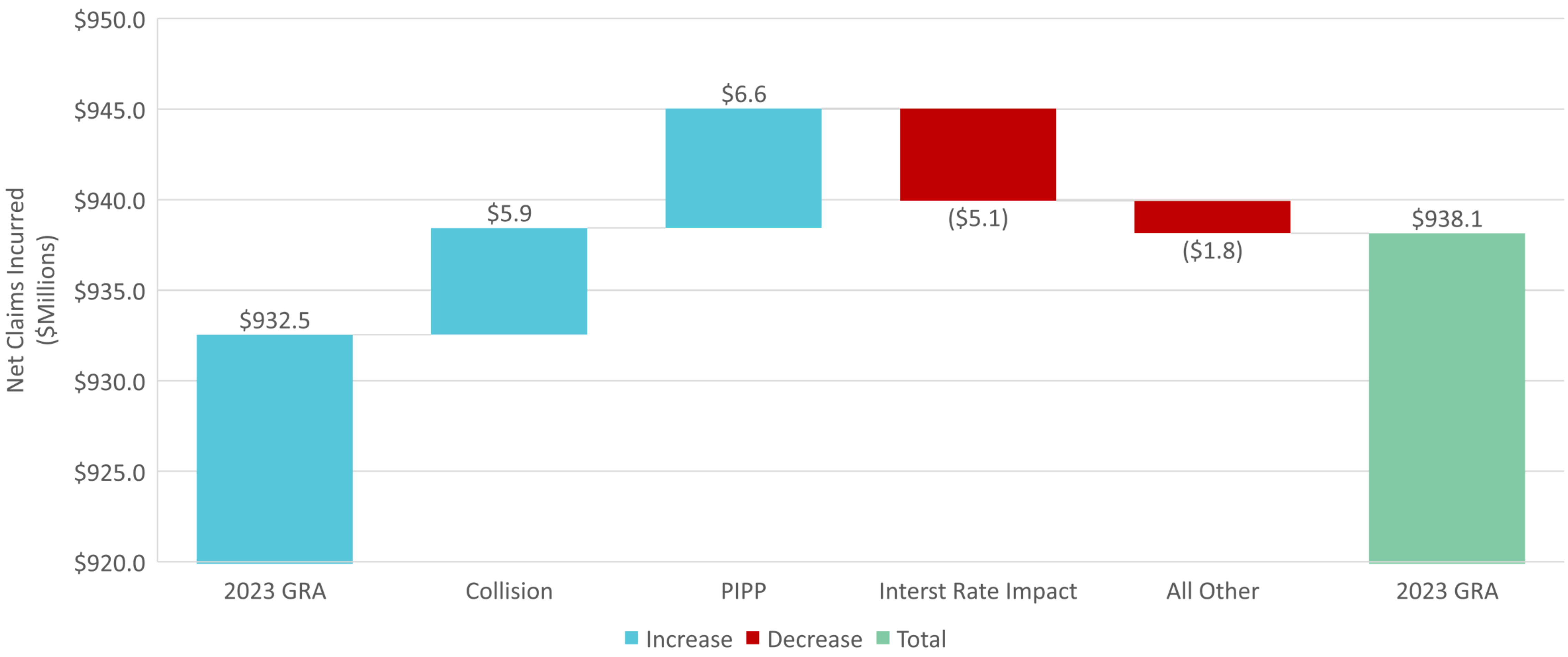
2021 Light Vehicle Accreditation Agreement (LVAA)

Initially, MPI estimated $7 million impact throughout the forecast years in 2022 GRA. Further revisions occurred when LVAA was implemented in 2021. The forecasted impact as in the 2023 GRA (July) are shown in the chart below.

Accident Insurance Year	Collision	Comprehensive
	($ millions)	
2022/23	$16.9	$1.6
2023/24	$20.8	$2.1
2024/25	$25.9	$3.1
2025/26	$25.9	$3.1
2026/27	$25.9	$3.1

The October rate update includes additional $4 million to $5 million due to increases to the labour rate and increases to materials such a paint.

2023/24 Variance from 2023 GRA Forecast



Frequency and Severity – Model Selection/Judgments

- **Linear <u>and</u> log-linear models are appropriate for estimating underlying data trends**
  - MPI used both linear and log-linear models in its claims forecasting
  - Use of log-linear models <u>*not*</u> appropriate when trend assumptions are excluded

- **Proper forecasting of claims <u>*requires*</u> understanding of underlying business**
  - Essential questions where an increase in severity
    - Can it be explained?
    - Will it continue into the forecast?
  - 2021/22 collision total loss severity – MPI selected 6.00% growth because:
    - Total loss severity rarely decreases (historical)
    - Inflationary pressure and supply chain issues increased prices of used vehicles
    - Maximum Insured Value increased from $50,000 to $70,000
  - Property Damage Third Party Loss of Use severity
    - Supply chain issues increased repair times and longer loss of use coverage

Frequency and Severity – Data Point Selection

Data point selection is key to accurate modelling of future expectations

- **Weekly Indemnity and ABO-Indexed Frequency**
  - 2015-2019 used to model pre-COVID trend (i.e., trend period used in collision repair frequency)
  - These claims are correlated to collision claims
- **Property Damage Third Party Deductible Transfer Severity**
  - Latest severity used as minor variation in data from year to year
  - Inappropriate to exclude latest data point given significant changes from CERP
- **Excluding data points as outliers without understanding the data is improper**
  - Could severely under or over-estimate forecast