Rising Auto Costs

Ratemaking, Product and Modeling Seminar
Casualty Actuarial Society
March 21, 2018

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Personal Auto

Rising Frequency, Severity Pinching the Largest P/C Line
Loss Ratios Have Been Rising for a Decade. 2016 Return on Net Worth is Likely Close to Zero or Negative.

Source: National Association of Insurance Commissioners data, sourced from S&P Global Market Intelligence; Insurance Information Institute.
# P/C Direct Incurred + ALAE Loss Ratio by LOB

<table>
<thead>
<tr>
<th>LOB</th>
<th>2017</th>
<th>2016</th>
<th>Change From Year Earlier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Auto</td>
<td>70</td>
<td>73</td>
<td>-3</td>
</tr>
<tr>
<td>Homeowners</td>
<td>75</td>
<td>54</td>
<td>21</td>
</tr>
<tr>
<td>GL (incl Products)</td>
<td>65</td>
<td>71</td>
<td>-6</td>
</tr>
<tr>
<td>WC</td>
<td>57</td>
<td>62</td>
<td>-5</td>
</tr>
<tr>
<td>Fire &amp; Allied Lines</td>
<td>109</td>
<td>51</td>
<td>58</td>
</tr>
<tr>
<td>CMP</td>
<td>68</td>
<td>58</td>
<td>10</td>
</tr>
<tr>
<td>Comm Auto</td>
<td>76</td>
<td>75</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>66</td>
<td>58</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>70</strong></td>
<td><strong>65</strong></td>
<td><strong>5</strong></td>
</tr>
</tbody>
</table>

Through Q4. Differences may not add up due to rounding.
Sources: NAIC data from S&P Global Intelligence, Insurance Information Institute.

Positive Number = Bad News
Rising Accident Costs

All Coverages Affected

Increase in Loss Costs, 2015:Q3–2017:Q3

<table>
<thead>
<tr>
<th>Coverage</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bodily Injury</td>
<td>12.4%</td>
</tr>
<tr>
<td>Property Damage</td>
<td>11.4%</td>
</tr>
<tr>
<td>Personal Injury Protection</td>
<td>6.4%</td>
</tr>
<tr>
<td>Collision</td>
<td>5.4%</td>
</tr>
<tr>
<td>Comprehensive</td>
<td>36.6%</td>
</tr>
</tbody>
</table>

From 2015 to 2017, the cost of accidents has risen dramatically. By contrast, consumer prices overall rose 3.4 percent during 2015 and 2017.

Source: Fast Track Monitoring System.

Annual Change, 2017 Over 2016*

- **Bodily Injury**: 7.6%
- **Property Damage Liability**: 4.2%
- **PIP**: 6.2%
- **Collision**: 0.3%
- **Comprehensive**: 10.7%

Frequency Spike Has Lessened. Severity Is Now the Problem.

*Four Quarters Ending in September.
Source: Fast Track Monitoring System.
Claim Trends by Coverage

Focus on Collision
Collision Claims: Frequency Trending Higher in 2010s

For a Long Time, Claim Frequency Was Falling, But Since 2010 This Trend Seems to Have Reversed.

Collision Claims: Severity Trending Higher in 2010-2016

The Great Recession Helped to Temper Claim Severity, But These forces Have Clearly Reversed, Consistent with Experience from Past Recoveries.

*Four Quarters Ending in September.
Source: ISO, a Verisk Analytics company; Insurance Information Institute.
What’s Driving These Trends?
Frequency; Severity; Distraction?
Road Safety

Better Economy = More Drivers = More Accidents

Economic well-being

Distracted driving

14 Percent of Injury Crashes

Safety Devices Can Be Expensive

Expensive auto parts

Faster driving

Legalized marijuana

It’s Not Funny

Source: Insurance Information Institute research.
America is Driving More Again: 2000-2017

Percent Change, Miles Driven*

Tremendous Growth In Miles Driven. The More People Drive, The More Frequently They Get Into Accidents.

*Moving 12-month total vs. prior year through December. Sources: Federal Highway Administration; Insurance Information Institute.
More Miles Driven => More Collisions

The More Miles People Drive, the More Likely They are to Get in an Accident, Helping Drive Claim Frequency Higher.

Sources: Federal Highway Administration; Rolling four-quarter average frequency from Fast Track Monitoring System; Insurance Institute for Highway Safety; Insurance Information Institute.
Why Are People Driving More Miles? Jobs?

People Drive to and from Work and Drive to Entertainment. Out of Work, They Curtail Their Movement.

Sources: Federal Highway Administration; Seasonally Adjusted Employed from Bureau of Labor Statistics via FRED; Insurance Institute for Highway Safety; Insurance Information Institute.

When People are Out of Work, They Drive Less. When They Get Jobs, They Drive to Work, Helping Drive Claim Frequency Higher.

Sources: Seasonally Adjusted Employed from Bureau of Labor Statistics; Rolling four-quarter average frequency from Fast Track Monitoring System; Insurance Information Institute.
Why Are People Driving More Miles?
Cheap Gas?

Billions of Miles Driven in Prior Year
Average Price Per Gallon

Gas Prices Don’t Seem Correlated With Miles Driven.

Sources: Federal Highway Administration; Energy Information Administration (All Grades All Formulations Retail Gas Prices); Insurance Institute for Highway Safety; Insurance Information Institute.
Comparing Gas Prices, Employment on Collision Frequency Through 2017

Sources: Seasonally Adjusted Employed from Bureau of Labor Statistics; Energy Information Administration; Rolling Four-Qtr Avg. Frequency from Fast Track Monitoring System; Insurance Information Institute.
Does Spending on Vehicles Affect Claim Severity?

As the Economy Has Gotten Better, People Are Spending More on Vehicles – When Those Cars Wreck, Severity Increases.

Recent Research

Frequency vs. Drivers per Lane Mile (Q4 2015)

\[ R^2 = 0.7509 \]

Variable Importance

- Drivers/Lane Mile
- Urban Avg Commute
- Rural Avg Commute
- Tort System
- % Urban VMT
- Rainy Area
- % Rural VMT
- Lane Miles
- Lawyers per Million
- Avg Miles/Driver
- Rural VMT/Lane
- DUls
- Urban VMT/Lane
- PIP

- + Ranked by IncNodePurity (change in predictions when a variable is randomly permuted through random decision forest)
- * Adjusted for miles driven
- Source: Auto Loss Cost Trend Report, January 2018 (Casualty Actuarial Society, Property Casualty Insurers Association of America, Society of Actuaries)
Severity: Driving Fatalities are Rising

Annual Change in Motor Vehicle Deaths

40,000 Deaths in 2016 and 2017 – an Everyday Catastrophe Reaching Epidemic Proportions

Sources: National Safety Council, Insurance Information Institute.
Medical Inflation Heating Up

Annual Percent Change, CPI - Medical

<table>
<thead>
<tr>
<th>Year</th>
<th>Medical CPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>4.6%</td>
</tr>
<tr>
<td>2003</td>
<td>4.7%</td>
</tr>
<tr>
<td>2005</td>
<td>4.0%</td>
</tr>
<tr>
<td>2007</td>
<td>4.4%</td>
</tr>
<tr>
<td>2009</td>
<td>4.2%</td>
</tr>
<tr>
<td>2011</td>
<td>3.7%</td>
</tr>
<tr>
<td>2013</td>
<td>3.4%</td>
</tr>
<tr>
<td>2015</td>
<td>3.0%</td>
</tr>
<tr>
<td>2017</td>
<td>2.5%</td>
</tr>
</tbody>
</table>

Fastest Growth in More Than a Decade

Injury Severity Typically Exceeds Medical CPI.

Sources: St. Louis Federal Reserve (FRED), Bureau of Labor Statistics Series ID CUUR0000SAM; Insurance Information Institute.
Fixing a Bumper

... On an Entry-Level Luxury Car (~$35K)

2014 Cost vs. 2016 Cost

What Has Changed?

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grille: Distance Sensor</td>
<td>$0</td>
<td>$2,818</td>
</tr>
<tr>
<td>Headlamp Assembly</td>
<td>394</td>
<td>918</td>
</tr>
<tr>
<td>Mechanical Labor</td>
<td>0</td>
<td>108</td>
</tr>
</tbody>
</table>

Fewer Accidents, Higher Costs

- Parts: 130% Higher
- Labor: 18% Higher
- Total cost: $1,705 higher

2016 vehicle has LED headlights and adaptive cruise control.
SOURCE: Liberty Mutual Insurance.
What About Distractions?
It’s A Problem. Is It Growing?

What We Do Behind The Wheel

<table>
<thead>
<tr>
<th>Activity</th>
<th>2009</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talk on Phone</td>
<td>65%</td>
<td>51%</td>
</tr>
<tr>
<td>Text</td>
<td>31%</td>
<td>36%</td>
</tr>
<tr>
<td>Surf the Net</td>
<td>13%</td>
<td>29%</td>
</tr>
</tbody>
</table>

But Impact Is Not Clear

Percentage of Crashes Involving Distraction

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Crash</th>
<th>Fatal Crash</th>
<th>Injury Crash</th>
<th>PDO* Crash</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td></td>
<td></td>
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<td></td>
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<td>2011</td>
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<td>2015</td>
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</tbody>
</table>

* Property Damage Only.

SOURCES: State Farm, National Highway Transportation Safety Administration (distraction.gov)
Weed Spreads Like Wildfire. Insurers Caught in the Middle

Current marijuana laws by state

- Fully legal
- Medical use legal and recreational use decriminalized
- Medical use legal
- Recreational use decriminalized
- Fully illegal
- Upcoming vote

Thank you for your time and your attention!

Read our auto [White Paper](https://www.iii.org) on Rising Personal Auto Costs at [www.iii.org](https://www.iii.org)