Insurance: Vanguard of the Resilient

AAA Oregon/Idaho
Portland, OR
March 9, 2019

James Lynch, FCAS MAAA, Chief Actuary
Insurance Information Institute • 110 William Street • New York, NY 10038
Tel: 212.346.5533 • jamesl@iii.org • www.iii.org
I.I.I. Mission Statement

Improving public understanding of insurance...

...what it does and how it works.
How Insurance Drives Economic Growth

**Safety/Security**

1. Insurers are financial first responders
2. Insurers are risk mitigators

**Economic/Financial Stability**

3. Insurers are capital protectors
4. Insurance is a partner in social policy
5. Insurance sustains the supply chain
6. Insurers are capital infusers

**Development**

7. Insurers are community builders
8. Insurance enables infrastructure improvements
9. Insurers are innovation catalysts
10. Insurers are credit facilitators
Catastrophes

Extreme Weather Threatens Union
1982 Union, Missouri, Flood
A Storm for the Ages

Bourbeuse River
Record Crest
33.8 feet
12/5/1982

Source: Fox2News.com, @BoxxRadio.
2015 Union, Missouri, Flood
A Storm for the Ages

Bourbeuse River
Record Crest
34.3 feet
12/29/2015

Sources: CBSnews.com; fox2news.com
2017 Union, Missouri, Flood

“Unfortunately, it’s a river and Mother Nature. And we can’t control her.”

Source: eMissourian.com
# Extreme Events: A Troubling Trend

<table>
<thead>
<tr>
<th>Rank</th>
<th>Date</th>
<th>Event</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aug. 2005</td>
<td>Hurricane Katrina</td>
<td>Hurricane</td>
</tr>
<tr>
<td>2</td>
<td>Sep. 2017</td>
<td>Hurricane Maria</td>
<td>Hurricane</td>
</tr>
<tr>
<td>3</td>
<td>Sep. 2017</td>
<td>Hurricane Irma</td>
<td>Hurricane</td>
</tr>
<tr>
<td>4</td>
<td>Sep. 2001</td>
<td>September 11 Events</td>
<td>Terrorism</td>
</tr>
<tr>
<td>5</td>
<td>Oct. 2012</td>
<td>Hurricane Sandy</td>
<td>Hurricane</td>
</tr>
<tr>
<td>6</td>
<td>Aug. 2017</td>
<td>Hurricane Harvey</td>
<td>Hurricane</td>
</tr>
<tr>
<td>7</td>
<td>Aug. 1992</td>
<td>Hurricane Andrew</td>
<td>Hurricane</td>
</tr>
<tr>
<td>8</td>
<td>Jan. 1994</td>
<td>Northridge, CA earthquake</td>
<td>Earthquake</td>
</tr>
<tr>
<td>9</td>
<td>Sep. 2008</td>
<td>Hurricane Ike</td>
<td>Hurricane</td>
</tr>
<tr>
<td>10</td>
<td>Oct. 2005</td>
<td>Hurricane Wilma</td>
<td>Hurricane</td>
</tr>
</tbody>
</table>


Source: The Property Claim Services® (PCS®) unit of ISO®, a Verisk Analytics® company.
**U.S. Inflation-Adjusted Cat Losses**

2018 – Third worst year for U.S. Insured Catastrophe Losses. Average Insured Loss per Year for 1980-2018 is $19.3 B.

*2018: Inflation-adjusted estimate, subject to change. 2010s is average of 2010 to 2018.
Sources: Property Claims Service, a Verisk Analytics business; Insurance Information Institute.*
Disruptive Forces in the World – The New Norm

Catastrophes

Geopolitical

Economics

Technology
Insurance Leading Throughout History

Cyber-Physical Systems
Insurers Studying Solutions to Extreme Weather

I.I.I., Actuaries, and IBHS offering resilience know-how to consumers on how to insure and protect themselves

- Proposed I.I.I. white paper
- The American Academy of Actuaries Climate Index
- Insurance Institute for Business & Home Safety (IBHS) resources

Source: Insurance Information Institute, American Academy of Actuaries Climate Index, Insurance Institute for Business & Home Safety.
Ed. & Analysis

Actuaries Climate Index – Measuring Weather Extremes

**Seasonal Five-Year** Moving Average, United States

Index Measures Frequency of Extreme Events (Heat, Cold, Drought, Wind, Rain, Sea Level) Vs. 1961-1990 Average

Source: Actuaries Climate Index, http://actuariesclimateindex.org/home/
I.I.I. To Create Resilience Index

How prepared is each state for the natural and man-made disasters they are likely to see?

I.I.I. and Aon to share their findings with the industry policy-makers and the general public

Forecasting powered by:

Dr. Michel Leonard, CBE
Vice President and
Senior Economist, I.I.I.
(Re)insurance Products

<table>
<thead>
<tr>
<th>Private Industry</th>
<th>Case Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEMA Reinsurance</td>
<td>Through a $150 million purchase of private reinsurance products, FEMA was able to recover approximately $1 billion, or an eighth of its total 2017 loses.</td>
</tr>
<tr>
<td>NFIP NatCat Bonds</td>
<td>By issuing new natural catastrophe bonds geared towards institutional investors, the NFIP can bring an estimated $500 million of additional reinsurance coverage.</td>
</tr>
<tr>
<td>Private Market Flood Products</td>
<td>During 2017, the private flood insurance market added 50 new carriers. Direct private flood insurance premiums written reached $630 million, an increase of $217 million over 2016.</td>
</tr>
</tbody>
</table>

Who Is Buying Flood Insurance?
Who Has It Vs. Who Needs It

NFIP Takeup Rates

<table>
<thead>
<tr>
<th>County</th>
<th>NFIP Takeup Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clatsop County</td>
<td>10%</td>
</tr>
<tr>
<td>Tillamook County</td>
<td>12%</td>
</tr>
<tr>
<td>Oregon</td>
<td>1.5%</td>
</tr>
<tr>
<td>Idaho</td>
<td>0.8%</td>
</tr>
<tr>
<td>USA</td>
<td>4.0%</td>
</tr>
</tbody>
</table>

Oregon Counties

<table>
<thead>
<tr>
<th>County</th>
<th>Major Floods</th>
<th>NFIP Takeup Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benton</td>
<td>1996</td>
<td>2%</td>
</tr>
<tr>
<td>Clackamas</td>
<td>1862</td>
<td>1%</td>
</tr>
<tr>
<td>Linn</td>
<td>1996</td>
<td>2%</td>
</tr>
<tr>
<td>Marion</td>
<td>1996</td>
<td>1%</td>
</tr>
<tr>
<td>Morrow</td>
<td>1903</td>
<td>1%</td>
</tr>
<tr>
<td>Multnomah</td>
<td>1876, 1894, 1948, 1994,</td>
<td>1%</td>
</tr>
<tr>
<td>Polk</td>
<td>1996</td>
<td>2%</td>
</tr>
</tbody>
</table>

FEMA Grant Vs. NFIP

Insurance Pays

Average Payout

<table>
<thead>
<tr>
<th></th>
<th>FEMA</th>
<th>NFIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Katrina</td>
<td>7,114</td>
<td>97,475</td>
</tr>
<tr>
<td>Sandy</td>
<td>8,016</td>
<td>66,473</td>
</tr>
</tbody>
</table>

Sources: National Flood Insurance Program, Reuters.
Private Flood Insurance
A $640 Million Market in 2017

Growing Faster Than Cyber

(DPW Growth, 2017 vs. 2016)

Source: S&P Global Market Intelligence data, sourced from NAIC; Insurance Information Institute.
Insurance Industry Economic Trends
Direct Premium Growth, Annual Change

Direct Premiums Continue to Track Economic Growth

All data through second quarter.

SOURCES: NAIC data sourced through S&P Global Intelligence, Bureau of Economic Affairs, Insurance Information Institute.
P/C industry net income after taxes

Billions, 2018 dollars

- $59.2
- $5.3
- $19.5
- $33.1
- $32.5
- $54.9
- $41.0
- $47.7
- $34.7
- $22.9
- $49.5

- 07
- 08
- 09
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18


Through third quarter. Adjusted for inflation using the BLS CPI calculator, to 2018 dollars.
Sources: NAIC data, sourced from S&P Global Market Intelligence; Insurance Information Institute.
P/C Insurance Industry Combined Ratio, 2000-2018*

- Heavy Use of Reinsurance Lowered Net Losses.
- Higher CAT Losses, Shrinking Reserve Releases, Toll of Soft Market
- Best Combined Ratio Since 1949 (87.6)
- Sandy
- 3 Consecutive Years of U/W Profits; 1st time since 1971-73
- Hurricanes, Wildfires Drive CR Higher.

Key sources of P/C insurer profits

Data are before taxes and exclude extraordinary items.
Sources: NAIC data, sourced from S&P Global Market Intelligence; Insurance Information Institute.
Oregon Results

... And some Idaho ...
RNW All Lines: OR vs. U.S.

P/C Insurer Profitability in OR is Above That of the U.S. Overall Over the Past Decade
U.S.: 6.2%
OR: 8.9%

Source: NAIC.
RNW PP Auto: OR vs. U.S.

Average 2008–2017
U.S.: 3.7%
OR: 7.1%

Source: NAIC.
RNW Comm. Auto: OR vs. U.S.

Average 2008–2017
U.S.: 4.5%
OR: 11.3%

Source: NAIC.
All Lines: 10-Year Average RNW OR and Nearby States, 2008–2017

Oregon All Lines Profitability is Above the U.S. Average (6.2%) and Regional Average (7.5%)

Sources: NAIC, Insurance Information Institute.
PP Auto: 10-Year Average RNW OR and Nearby States, 2008–2017

Oregon PP Auto Profitability is Above the U.S. (3.7%) and Regional Average (6.1%)

Sources: NAIC, Insurance Information Institute.
Top Ten Most Expensive and Least Expensive States for Automobile Insurance, 2016

<table>
<thead>
<tr>
<th>Rank</th>
<th>Most Expensive States</th>
<th>Average Expenditure</th>
<th>Rank</th>
<th>Least Expensive States</th>
<th>Average Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>New Jersey</td>
<td>$1,309.29</td>
<td>1</td>
<td>Idaho</td>
<td>$599.77</td>
</tr>
<tr>
<td>2</td>
<td>Louisiana</td>
<td>1,302.11</td>
<td>2</td>
<td>Iowa</td>
<td>628.10</td>
</tr>
<tr>
<td>3</td>
<td>New York</td>
<td>1,301.64</td>
<td>3</td>
<td>North Dakota</td>
<td>639.10</td>
</tr>
<tr>
<td>4</td>
<td>Michigan</td>
<td>1,270.70</td>
<td>4</td>
<td>South Dakota</td>
<td>648.01</td>
</tr>
<tr>
<td>5</td>
<td>Florida</td>
<td>1,259.55</td>
<td>5</td>
<td>Maine</td>
<td>650.38</td>
</tr>
<tr>
<td>6</td>
<td>District of Columbia</td>
<td>1,246.80</td>
<td>6</td>
<td>Wyoming</td>
<td>677.53</td>
</tr>
<tr>
<td>7</td>
<td>Rhode Island</td>
<td>1,193.58</td>
<td>7</td>
<td>Wisconsin</td>
<td>688.32</td>
</tr>
<tr>
<td>8</td>
<td>Delaware</td>
<td>1,159.86</td>
<td>8</td>
<td>Vermont</td>
<td>691.56</td>
</tr>
<tr>
<td>9</td>
<td>Massachusetts</td>
<td>1,096.53</td>
<td>9</td>
<td>Indiana</td>
<td>692.29</td>
</tr>
<tr>
<td>10</td>
<td>Connecticut</td>
<td>1,086.17</td>
<td>10</td>
<td>North Carolina</td>
<td>699.91</td>
</tr>
</tbody>
</table>

Oregon Ranked 21st in Average Expenditure for Auto Insurance in 2016. The Average Expenditure was $877.09.

1 Based on average automobile insurance expenditures. Source: © 2018 National Association of Insurance Commissioners.
Comm. Auto: 10-Year Average RNW OR and Nearby States, 2008–2017

Oregon Comm. Auto Profitability is Above the U.S. (4.5%) and Regional Average (5.7%)

Sources: NAIC, Insurance Information Institute.
All Lines DWP Growth: OR vs. U.S.

Average 2008–2017
U.S.: 2.5%
OR: 2.2%

Source: NAIC data, sourced from S&P Global Market Intelligence, Insurance Information Institute.
Private Passenger Auto DWP Growth: OR vs. U.S.

Average 2008–2017

U.S.: 3.6%
OR: 4.0%

Source: NAIC data, sourced from S&P Global Market Intelligence, Insurance Information Institute.
Commercial Auto DWP Growth: OR vs. U.S.

Average 2008–2017
U.S.: 2.4%
OR: 1.9%

Source: NAIC data, sourced from S&P Global Market Intelligence, Insurance Information Institute.
Auto Coverages

The Tide Has Turned.
But It Is Not Low Tide.
Auto Net Combined Ratio

Rate Actions Helped Personal Auto Results. Not So for Commercial Auto.

Source: National Association of Insurance Commissioners data, sourced from S&P Global Market Intelligence; Insurance Information Institute.
Rising Accident Costs
All Coverages Affected

Increase in Loss Costs, 2016:Q3–2018:Q3

- Bodily Injury: 6.7%
- Property Damage: 3.8%
- Personal Injury Protection: 4.8%
- Collision: 3.5%
- Comprehensive: -4.0%

From 2016 to 2018, the cost of accidents has risen dramatically. By contrast, consumer prices overall rose 6.6 percent from 2016 to 2018.

Source: Fast Track Monitoring System.
### Results by Line

#### Incurred Loss Ratios

<table>
<thead>
<tr>
<th>LOB</th>
<th>2018</th>
<th>2017</th>
<th>Change From Year Earlier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Auto Liab</td>
<td>66</td>
<td>70</td>
<td>-4.7</td>
</tr>
<tr>
<td>Homeowners</td>
<td>63</td>
<td>70</td>
<td>-7.1</td>
</tr>
<tr>
<td>PhysDam (PA, CA)</td>
<td>60</td>
<td>67</td>
<td>-7.0</td>
</tr>
<tr>
<td>GL (incl Products)</td>
<td>57</td>
<td>55</td>
<td>2.6</td>
</tr>
<tr>
<td>WC</td>
<td>48</td>
<td>54</td>
<td>-6.0</td>
</tr>
<tr>
<td>Fire &amp; Allied Lines</td>
<td>66</td>
<td>118</td>
<td>-51.9</td>
</tr>
<tr>
<td>CMP</td>
<td>58</td>
<td>63</td>
<td>-5.3</td>
</tr>
<tr>
<td>Comm Auto Liab</td>
<td>70</td>
<td>69</td>
<td>0.9</td>
</tr>
<tr>
<td>Other</td>
<td>44</td>
<td>50</td>
<td>-6.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>59</td>
<td>67</td>
<td>-7.6</td>
</tr>
</tbody>
</table>

Positive Number = Bad News

---

Through Q3. Differences may not add up due to rounding.
Sources: NAIC data from S&P Global Intelligence, Insurance Information Institute.
Loss Ratio Trends

Liability and PhysDam Loss Ratios

Auto Loss Ratios Where They Were in 2014 – When the Combined Ratio Was 102.

Claim Trends by Coverage

Focus on Collision
Claim Frequency Has Been Flat Since 2014. But It Normally Falls.

*Four Quarters Ending in September.
Source: Fast Track Monitoring System.
Collision Claims: Severity Trending Higher

Annual % Change


0.5% 0.1% -1.4% -0.7% 2.0% 2.5% 3.0% 1.8% 4.6% 6.3% 0.0% 4.4%

The Size of Claims Keeps Growing.

*Four Quarters Ending in September.
Source: Fast Track Monitoring System
What's Driving These Trends?
Frequency; Severity; Distraction?
Road Safety

Key Issues

- Better Economy = More Drivers = More Accidents
- Distracted driving
- Expensive auto parts
- Faster driving
- Legalized marijuana
- It’s Not Funny
- 14 Percent of Injury Crashes

Source: Insurance Information Institute research.
More People Working and Driving => More Collisions

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.
Severity: Driving Fatalities are Rising

Annual Change in Motor Vehicle Deaths

Seatbelt Use Rose to 62% of Drivers, From 49% in ‘90

Big Drop-off Due to the Great Recession

Driving Has Been Getting Safer for Decades, But Recent Trend is Discouraging—over 40,000 Deaths in 2016

Sources: National Safety Council, Insurance Information Institute.
*2018 estimate of 40,000 deaths
Auto Repair: Complexity Grows
More Cool Stuff to Fix

More Parts, More Labor: Higher Costs

<table>
<thead>
<tr>
<th>Parts/Collision Claim on Current Year Car</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
</tr>
</tbody>
</table>

22% Increase!

Electronics Add to Cost, Complexity

- Ford F150: 150
- Facebook: 60
- Boeing 787: 7

Electronics: 40-50% of cost of vehicle
- Pre-repair scan: $63
- Post-repair scan: $93
- Calibration labor: sublet at $150
- OEM: 98% of camera/sensors

* Property Damage Only.
SOURCES: CCC Information Services; Ford Motor Co.;
Fixing a Bumper
. . . On an Entry-Level Luxury Car (~$35K)

2014 Cost vs. 2016 Cost

What Has Changed?

<table>
<thead>
<tr>
<th>Parts</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>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td></td>
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<td>2012</td>
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<td>2014</td>
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<td></td>
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<tr>
<td>2015</td>
<td></td>
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</tr>
</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

Sources:
- Map - National Journal; Ballotpedia, 2019
- Collision Frequency – IIHS, LEGAL POT: Crashes are up in states with retail sales, October 18, 2018
Thank you for your time and your attention!

Read our auto White Paper on Rising Personal Auto Costs at www.iii.org