



**PINNACLE**  
ACTUARIAL RESOURCES

**State of Commercial Auto Insurance**

Gregory W. Fears Jr., FCAS, MAAA, ARM | Pinnacle Actuarial Resources, Inc.  
Michael Brannon, FCAS, MAAA, CPCU, ARe | Great West Casualty Company  
Christian Tieman, CPA | Armanino LLP

September 21, 2022

1

---

---

---

---

---


---

---

---

## Antitrust Notice

- The Casualty Actuarial Society is committed to adhering strictly to the letter and spirit of the antitrust laws. Seminars conducted under the auspices of the CAS are designed solely to provide a forum for the expression of various points of view on topics described in the programs or agendas for such meetings.
- Under no circumstances shall CAS seminars be used as a means for competing companies or firms to reach any understanding – expressed or implied – that restricts competition or in any way impairs the ability of members to exercise independent business judgment regarding matters affecting competition.
- It is the responsibility of all seminar participants to be aware of antitrust regulations, to prevent any written or verbal discussions that appear to violate these laws, and to adhere in every respect to the CAS antitrust compliance policy.



2

---

---

---

---

---

---

---

---

### About the Presenters

Fellow of the CAS

Associate in Risk Management (ARM)

B.A. Mathematics – Carthage College

21 years of experience in the property/casualty consulting industry

Reserving studies for:


- Insurance companies (SAO and financial exams)
- Captive insurance companies
- Self-insured entities
- Public entities


Funding recommendations for emerging coverages

Experience reviewing industry financial statement data and associated trends

Risk margin modeling

**Gregory W. Fears Jr.**  
Senior Consulting Actuary  
Pinnacle Actuarial Resources, Inc.





3

3

---

---

---

---

---

---


---

---

**About the Presenters**

Fellow of the CAS, Member of the AAA  
Chartered Property Casualty Underwriter (CPCU)  
Associate in Reinsurance (ARe)  
B.S. Mathematics – University of Nebraska  
35 years of experience in personal and commercial property/casualty insurance  
15 years Adjunct Professor for Northwestern College  
Charter officer of the Central States Actuarial Forum  
Past presenter at the Casualty Ratemaking Seminar

**Michael Brannon, FCAS, MAAA, CPCU, ARe**  
Assistant Vice President | Manager,  
Risk Management Underwriting  
Great West Casualty Company



GREAT WEST CASUALTY COMPANY  
The Difference is Service™  
© 2022 GREAT WEST CASUALTY COMPANY  
All Rights Reserved

4

---

---

---

---

---

---

---


---

**About the Presenters**

Member of the MO AICPA and IASA  
Masters in Accountancy – SIUE  
13 years of experience in the property/casualty insurance industry, with a heavy emphasis in:

- Risk Based Audit Scoping
- Evaluation of ELC/ALC around Significant Audit Areas
- Evaluation of Significant Estimates
- Financial Reporting and Required Footnote Disclosures

**Christian Tieman**  
Director, Insurance Audit  
Armanino



© Armanino LLP | armaninoLLP.com  
**armanino**

5

---

---

---

---

---

---

---

---

**Agenda**

- ▶ Introduction: Commercial Auto Makeup
- ▶ Industry Trends – Why the Concern?
- ▶ Industry Benchmarks and Financial Results
- ▶ Current Issues
- ▶ Audit Perspective
- ▶ Future Considerations

6

---

---

---

---

---

---

---

---

### Introduction: Commercial Auto Makeup



7

---

---

---

---

---

---

---

---

### Trucking Market

TOP 10 FOR-HIRE CARRIERS 2021 BY REVENUE

Company	2021 Fleet Count
UPS Inc.	15,719
FedEx Corp.	36,598
XPO Logistics	15,500
J.B. Hunt Transport Services	17,777
TFI International	24,604
Knight-Swift Transportation Holdings	19,025
Schneider	9,000
Yellow Corp.	13,500
Landstar System	10,991
Old Dominion Freight Line	7,105

TOP 10 PRIVATE CARRIERS 2021 BY REVENUE

Company	2021 Fleet Count
PepsiCo Inc.	10,870
Sysco Corp.	8,745
Wal-Mart Inc.	7,400
Halliburton Co.	5,677
U.S. Foods	5,426
Reyes Holdings	5,104
Performance Food Group	4,767
McLane Co.	3,852
Tyson Foods	2,594
Helena Agri-Enterprises	2,552

Source: Transport Topics, [www.ttnews.com](http://www.ttnews.com). Fleet size is number of tractors.



8

---

---

---

---

---

---

---

---

### Trucking and Captives

Trucking Captive	Captive Consultant	Years in Operation
TRIP	Artex	20
STIL	Cottingham & Butler	11
Safe Trucking	Cottingham & Butler	15
Truck	Captive Resources	20
Wheels	Captive Resources	17
Traffic	Captive Resources	25



9

---

---

---

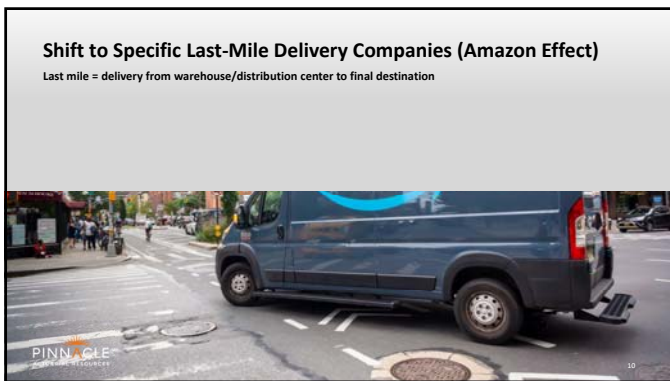
---

---

---

---

---



10

---

---

---

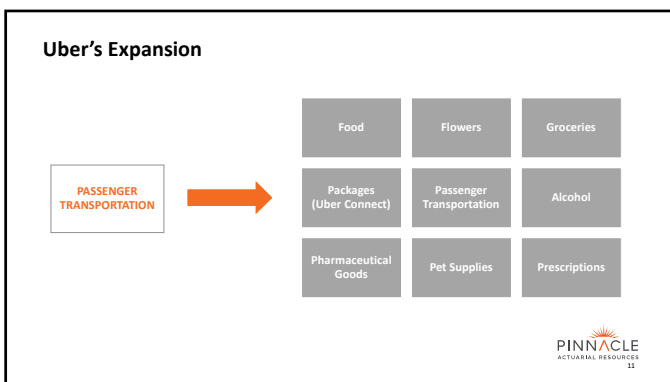
---

---

---

---

---



11

---

---

---

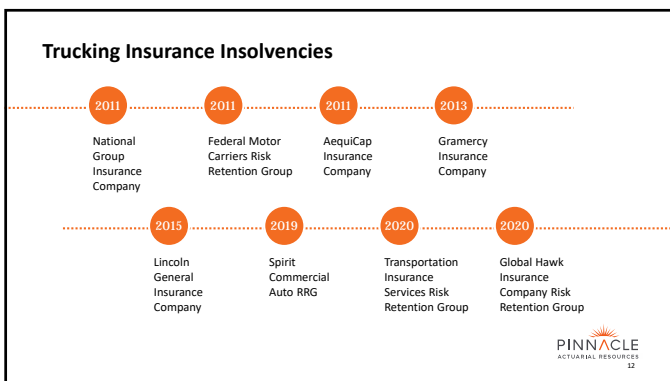
---

---

---

---

---



12

---

---

---

---

---

---

---

---

### Commercial Auto Coverages

<p><b>TYPICAL:</b></p> <ul style="list-style-type: none"> <li>- Bodily Injury (BI)</li> <li>- Property Damage (PD)</li> <li>- Uninsured/Underinsured Motorist</li> <li>- Medical Payments (MedPay)</li> <li>- Personal Injury Protection (PIP)</li> <li>- Comprehensive</li> <li>- Collision</li> </ul>	<p><b>TRUCKING-SPECIFIC:</b></p> <ul style="list-style-type: none"> <li>- Non-Trucking Liability (NTL)</li> <li>- Bobtail</li> <li>- Deadhead</li> <li>- Occupational Accident</li> <li>- Cargo Liability</li> </ul>
---	--



**PINNACLE**  
ACTUARIAL RESOURCES

13

---

---

---

---

---

---

---

---

### Data Sources

- Federal Motor Carrier Safety Administration (FMCSA)
  - Motor Carrier Management Information System (MCMIS) Crash File
- National Highway Traffic Safety Administration (NHTSA)
  - Fatality Analysis Reporting System (FARS)
  - General Estimates System (GES)
- Federal Highway Administration (FHWA)
  - Highway Statistics
- Bureau of Transportation Statistics (BTS)

**PINNACLE**  
ACTUARIAL RESOURCES

14

---

---

---

---

---

---

---

---

### Industry Data – NAIC

- NAIC – Commercial Auto Liability (CAL) is all commercial vehicle types
- Just a few NAIC annual statement lines of business:
  - HOMEOWNERS
  - COMMERCIAL MULTI PERIL
  - MEDICAL PROFESSIONAL LIABILITY
  - COMMERCIAL AUTO LIABILITY (CAL)
  - PRIVATE PASSENGER AUTO LIABILITY
  - WORKERS' COMPENSATION
  - AUTO PHYSICAL DAMAGE

**PINNACLE**  
ACTUARIAL RESOURCES

15

---

---

---

---

---

---


---

---

### Industry Data – ISO

ISO – Commercial Auto split by vehicle type

- Bus
  - School, church and “urban” buses
  - Buses used to transport athletes and entertainers
  - Airport, charter, inter-city and sightseeing buses
  - Etc.
- Garage
  - Franchised and non-franchised dealers of motor vehicles
- Misc. Vehicles
  - Ambulances
  - Vehicles with welding apparatuses
  - Any risk not included in the ISO circulars
- Private Passenger Types
  - Sedans used by a business
  - Certain other vehicles used by farmers



16

---

---

---

---

---

---

---

---


---

---

### Industry Data – ISO

ISO – Commercial Auto split by vehicle type

- Public
  - Taxis
  - Limousines
  - Van pools
  - Social service automobiles
- Trucks, Tractors and Trailers
  - Light, medium and heavy trucks
  - Heavy and extra-heavy truck tractors
  - Trailers
- Zone-Rated
  - Zone-rated trucks, tractors and trailers
  - Includes light, medium and heavy trucks
  - Heavy and extra-heavy truck tractors
  - Trailers



17

---

---

---

---

---

---

---

---

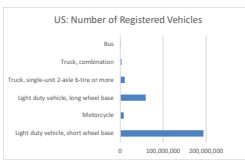
---

---

### Commercial Vehicle Distribution

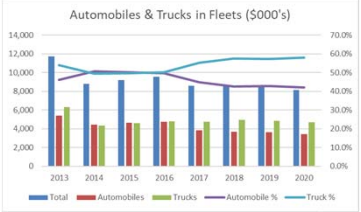
276M registered vehicles in the U.S. in 2020

Approximately 13.5M single-unit and combination trucks




US: Number of Registered Vehicles

Source: BTS



Automobiles & Trucks in Fleets ('000's)

Source: BTS



18

---

---

---

---

---

---

---

---

---

---

**GREAT WEST CASUALTY COMPANY**  
The Difference is Service™



**Industry Trends – Why the Concern?**

REPUBLIC INSURANCE GROUP

19

---

---

---

---

---

---

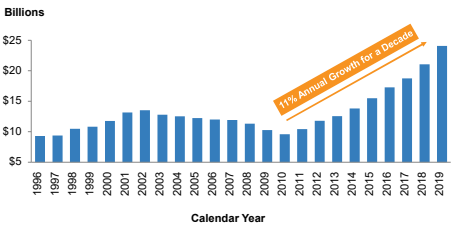
---

---

---

---

**Upward Trend in Incurred Losses**  
Incurred Losses, Commercial Auto Liability



Billions

Calendar Year

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

**GREAT WEST CASUALTY COMPANY**  
The Difference is Service™

© 2020 GREAT WEST CASUALTY COMPANY  
All Rights Reserved.

20

---

---

---

---

---

---

---

---


---

---

**Upward Creep in Loss Development**  
Key assumption: LDF is RV about mean + inflation

Comm Auto LDFs				
	12	24	36	48
2009	1.34	1.14	1.08	1.03
2010	1.36	1.16	1.08	1.04
2011	1.40	1.16	1.08	1.04
2012	1.40	1.16	1.09	1.04
2013	1.41	1.18	1.10	1.04
2014	1.42	1.19	1.10	1.05
2015	1.45	1.18	1.11	
2016	1.43	1.20		
2017	1.44			

**2-Year Expected vs. Actual**



12-36 Development (\$ Millions)

Expected Actual

Accident Year

Source: NAIC data sourced from S&P Global Intelligence, Insurance Information Institute. Expected: 3-yr Straight Average.

**GREAT WEST CASUALTY COMPANY**  
The Difference is Service™

© 2020 GREAT WEST CASUALTY COMPANY  
All Rights Reserved.

21

---

---

---

---

---

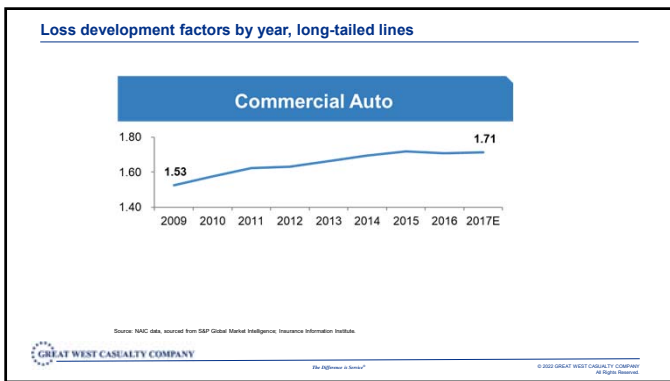
---

---

---

---

---



22

---

---

---

---

---

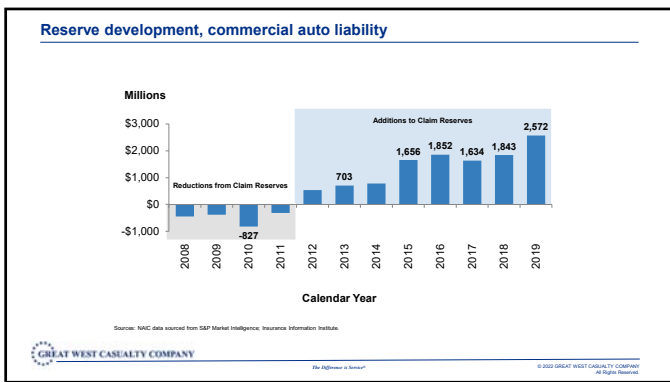
---

---

---

---

---



23

---

---

---

---

---

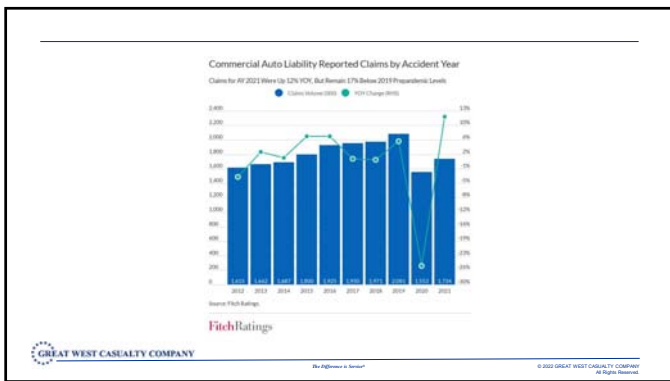
---

---

---

---

---



24

---

---

---

---

---

---

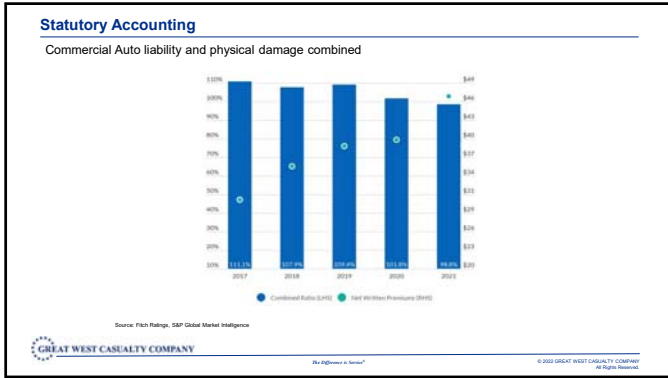
---

---

---

---





25

---

---

---

---

---

---

---

---

---

---

- ### Why Is It Happening?
- Rising Accident Severity
  - Rising Medical Costs
  - Rising Repair Costs
  - Distracted Driving
  - Changing Legal Environment
    - Nuclear Verdicts
    - Litigation Financing
- GREAT WEST CASUALTY COMPANY  
We're different. In a better way.<sup>SM</sup>  
© 2022 GREAT WEST CASUALTY COMPANY  
All Rights Reserved.

26

---

---

---

---

---

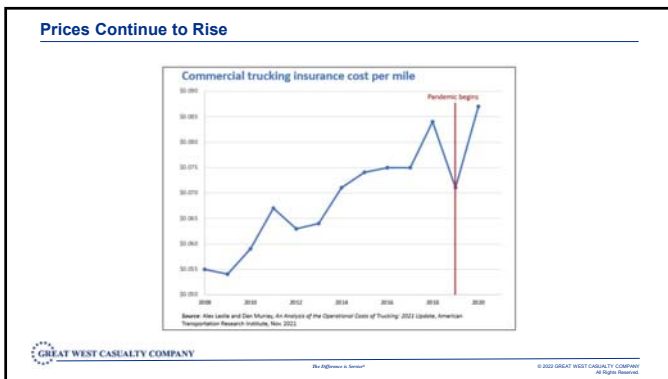
---

---

---

---

---



27

---

---

---

---

---

---

---

---

---

---



28

---

---

---

---

---

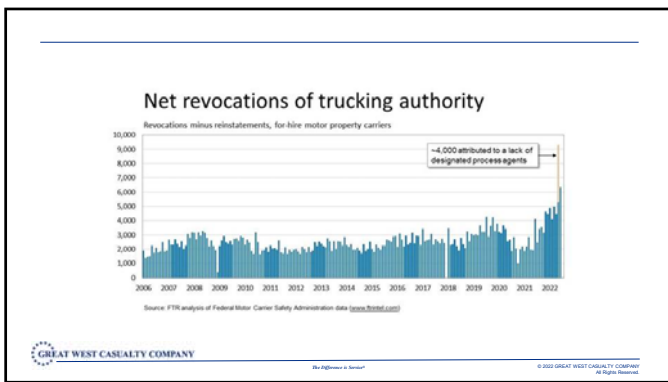
---

---

---

---

---



29

---

---

---

---

---

---

---

---

---

---

- ### Trucking Industry Top Concerns
1. Driver shortage
  2. Driver retention
  3. Driver compensation
  4. Lawsuit abuse reform
  5. Truck parking
  6. Compliance, safety, accountability
  7. Detention/delay at customer facilities
  8. Transportation infrastructure
  9. Insurance cost/availability
  10. Diesel technician shortage
- GREAT WEST CASUALTY COMPANY  
We Inspire a Safer™  
© 2022 GREAT WEST CASUALTY COMPANY  
All Rights Reserved.

30

---

---

---

---

---

---

---

---

---

---

## Industry Benchmarks and Financial Results



31

---

---

---

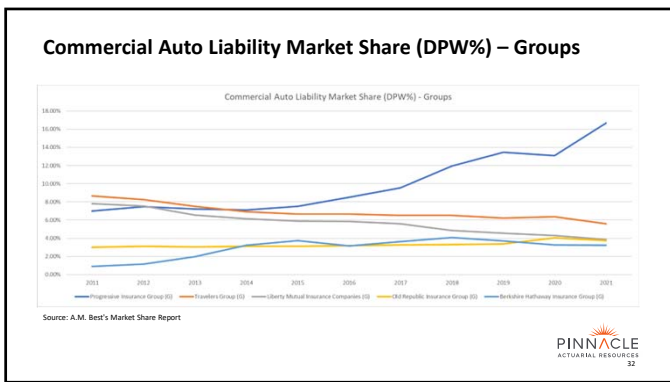
---

---

---

---

---



32

---

---

---

---

---

---


---

---

### Current Commercial Auto Loss Cost (or Pure Premium) Industry Trend

AMB#	NAIC#	Company Name	CAL LC (or PP) Trend
001900	11770	United Financial Casualty Company	12.6%
004461	25674	Travelers Property Casualty Co of Amer	6.5%
000060	44393	West American Insurance Company	10.1%
000733	24147	Old Republic Insurance Company	5.9%
000811	10391	Berkshire Hathaway Direct Insurance Company	9.0%
N/A	N/A	Insurance Services Office	6.5%
<b>Average</b>			<b>8.4%</b>

Source: Individual rate filings for each company from A.M. Best's State Rate Filings



33

---

---

---

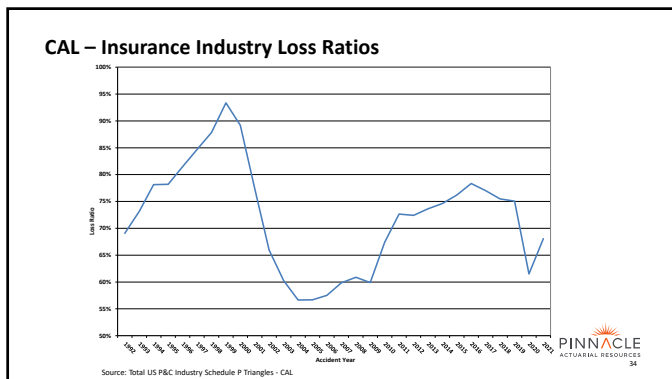
---

---

---

---

---



34

---

---

---

---

---

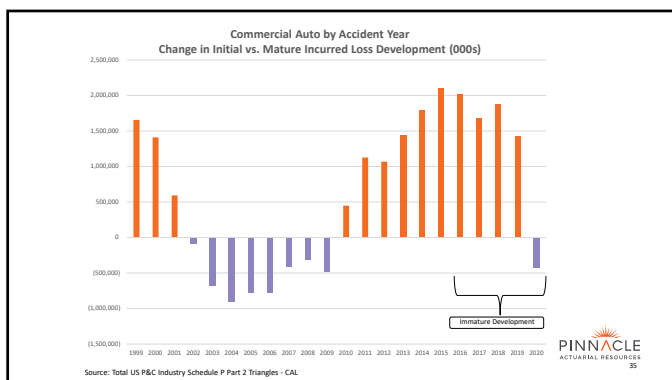
---

---

---

---

---



35

---

---

---

---

---

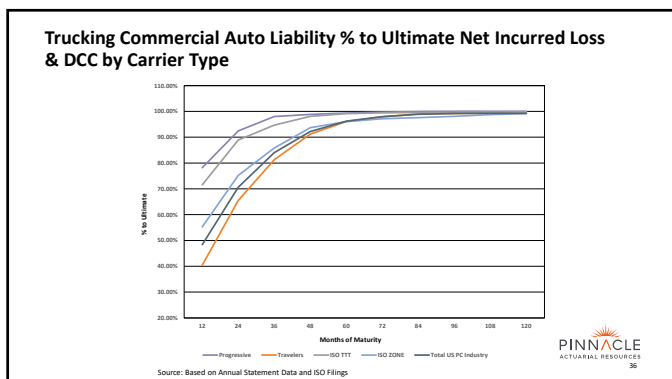
---

---

---

---

---



36

---

---

---

---

---

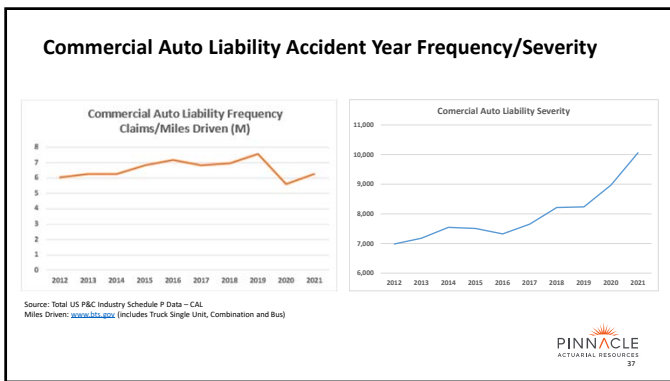
---

---

---

---

---



37

---

---

---

---

---

---

---

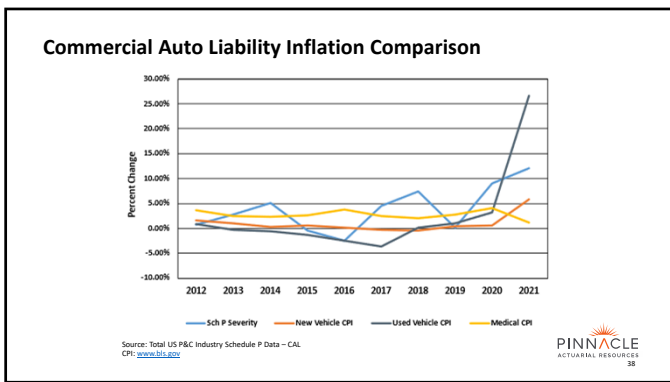
---

---

---

---

---



38

---

---

---

---

---

---

---

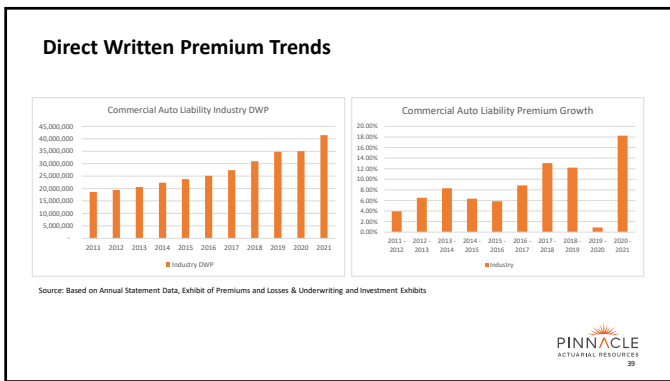
---

---

---

---

---



39

---

---

---

---

---

---

---

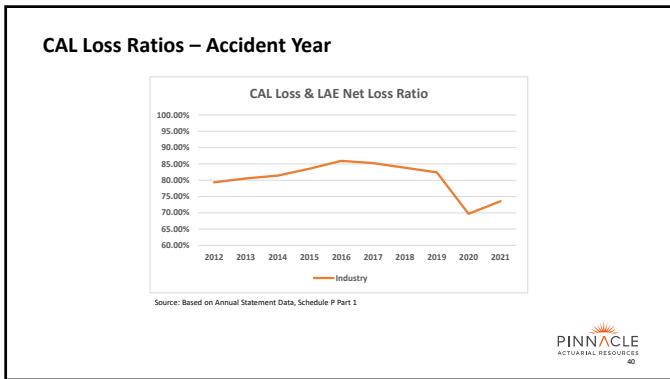
---

---

---

---

---



40

---

---

---

---

---

---

---

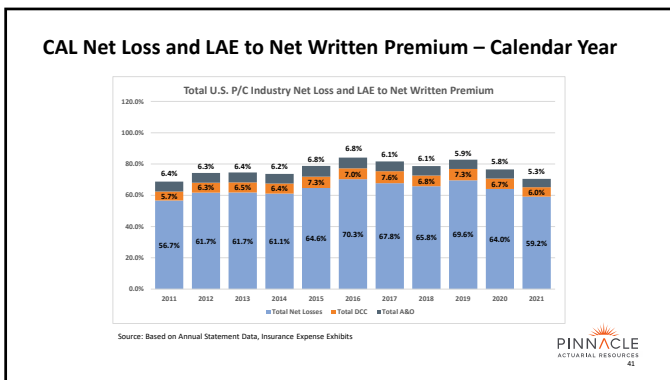
---

---

---

---

---



41

---

---

---

---

---

---

---

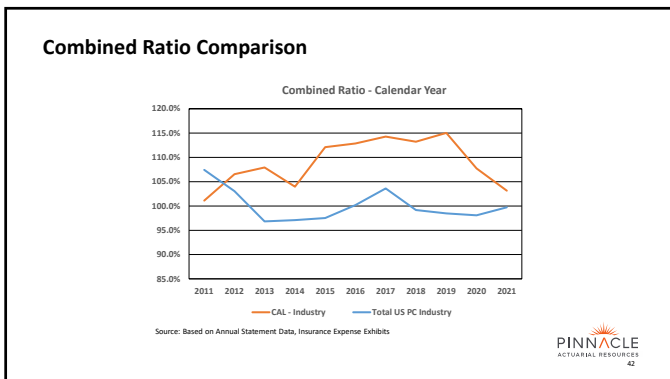
---

---

---

---

---



42

---

---

---

---

---

---

---

---

---

---

---

---

**Current Issues**



43

---

---

---

---

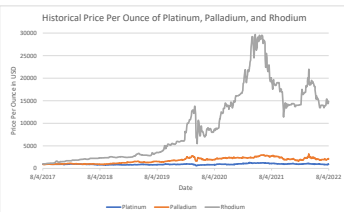
---

---

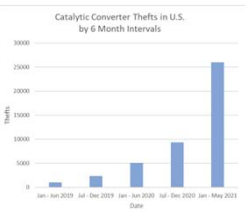
---

---


**Increase in Comprehensive Claims Driven by Catalytic Converter Thefts**



Source: platinum.matthey.com



Source: NICB and Way.com



44

---

---

---

---

---

---

---

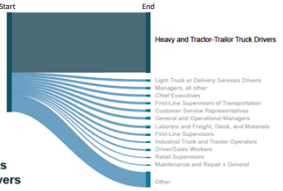
---

**Driver Trends**

- Younger workers are not entering the industry
  - Competition
  - Undesirable characteristics
  - Training and requirements
  - COVID-19 impact

Start

Heavy and Tractor-Trailer Truck Drivers




End

Heavy and Tractor-Trailer Truck Drivers

- Light Truck or Delivery Services Drivers
- Managers, all other
- Chief Executives
- Field Line Supervisors of Transportation
- Customer Service Representatives
- Control and Operations Managers
- Laborers and Freight, Stock, and Materials
- First-Line Supervisors
- Industrial Truck and Tractor Operators
- Construction Workers
- Retail Salespersons
- Maintenance and Repair Workers General
- Other

Emol Profile Analysis, Q4 2020



45

---

---

---

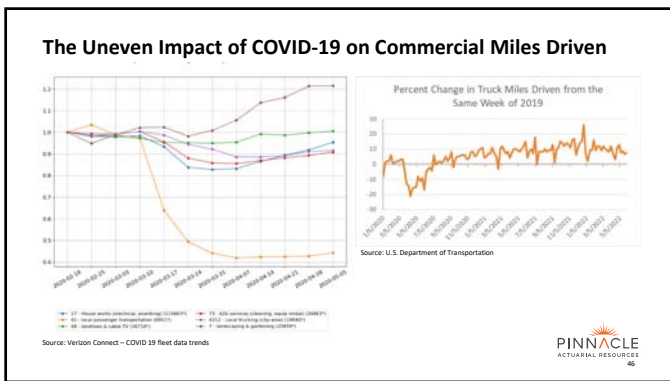
---

---

---

---

---



46

---

---

---

---

---

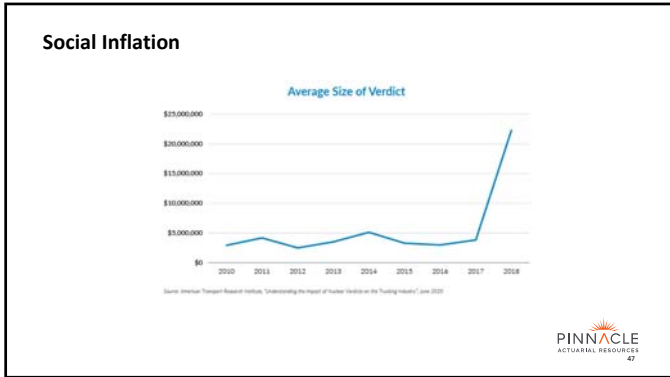
---

---

---

---

---



47

---

---

---

---

---

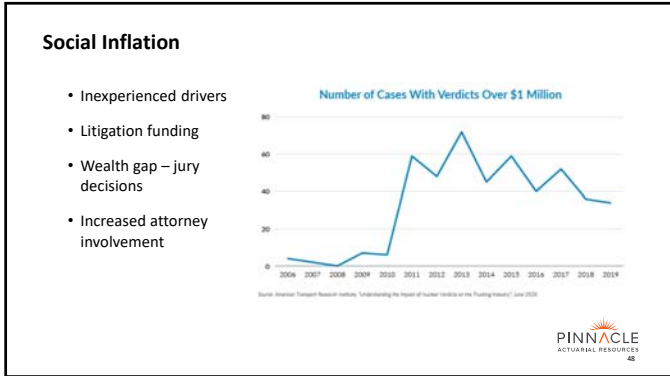
---

---

---

---

---



48

---

---

---

---

---

---

---

---

---

---



### Social Inflation

- Reptile theory – REPTILE: The 2009 Manual of the Plaintiff’s Revolution
  - Ask jurors to put themselves in the shoes of the plaintiff
- Texas HB 19 – Passed, Effective 9/1/2021
  - Two-phase trial
- Louisiana SB 115 – Passed, Effective 1/1/2021
  - Disclose attorney fees/expenses

Year Claim Closed	Percent of Claims with attorneys	Texas Commercial Automobile – Percent of Claims with Attorney and Average Loss and Allocated Loss Adjustment Expenses								
		All Claims			Claims with attorney		Claims without attorney			
		Average Total Loss	Average Total MALE	Average Total Loss and MALE	Average Total Loss and MALE	Average Total Loss and MALE	Average Total Loss and MALE			
2015	34.9%	62,988	7,495	70,483	122,820	15,932	172,762	12,099	62	23,927
2016	36.7%	70,028	8,238	78,266	167,348	21,323	188,671	13,623	596	14,219
2017	37.8%	63,389	12,130	75,519	148,366	20,697	178,063	11,913	948	12,861
2018	37.8%	76,480	7,954	84,434	138,468	20,618	159,087	8,289	276	8,565
2019	38.7%	76,922	8,588	85,510	163,348	21,987	185,335	9,379	436	9,815
2015-2018	36.7%	68,311	8,910	77,221	151,712	20,095	171,807	12,581	649	13,230
2019	38.7%	76,922	8,588	85,510	163,348	21,987	185,335	9,379	436	9,815
Percent Change	8.4%	12.0%	0.3%	22.7%	8.3%	8.8%	6.4%	21.4%	26.0%	-22.2%

Source: Trends in Attorney Representation: Texas Commercial Automobile Insurance - Milliman

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

### Reptile Theory Cases

- 2017 accident
- Nassau County, Florida
- Melissa Dzion vs. AJD Business Services and Kahkashan Carrier
- \$1 billion verdict:
  - Pain and suffering \$100 million
  - Punitive damages \$900 million
- 2014 accident
- Harris County, Texas
- Midgett vs. Werner Enterprises, Inc.
- \$89.7 million verdict
  - No punitive damages

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

### Social Inflation Impact on Commercial Auto

- [CAS Research Paper: “Social Inflation and Loss Development”](#)

**\$20 billion** of additional loss due to social inflation

**14%** of booked loss due to social inflation

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

### Fleet Tracking Technologies

- GPS tracking
- Dynamic routing
- Telematics
- Driver-facing, front-facing, rear-facing cameras
- Advanced driver assistance



PINNACLE  
ACTUARIAL RESOURCES

52

52

---

---

---

---

---

---

---

---



### Commercial Auto Loss Reserving – Audit Considerations

armanino

53

---

---

---

---

---

---

---

---

### Auditing Estimates: Understanding "Risk" Characteristics & Methodologies

Testing How Management Made the Accounting Estimate:

AU-C 342.9 In evaluating the reasonableness of an estimate, the auditor normally concentrates on key factors and assumptions that are:

- Significant to the accounting estimate;
- Sensitive to variations;
- Deviations from historical patterns
- Subjective and susceptible to misstatement and bias

© Armanino LLP | armaninoLLP.com

armanino

54

---

---

---

---

---

---

---


---

**Auditing Estimates: Understanding "Risk" Characteristics & Methodologies**

Testing How Management Made the Accounting Estimate:

AU-C 342.21 When testing how management made the accounting estimate, the auditor's further audit procedures should include procedures, designed and performed in accordance with paragraphs .22--.25, to obtain sufficient appropriate audit evidence regarding the risks of material misstatement relating to the following:

- a. The selection and application of methods, significant assumptions, and data used by management;
- b. How management selected the point estimate

55 © Armanino LLP | armaninoLLP.com 

55

---

---

---

---

---

---

---

---

---

---

---

---


**Auditing Estimates: Understanding "Risk" Characteristics & Methodologies**

**Type of Businesses and Their Effect on the Estimation Process**

- Policy Duration**
  - Short Duration or Long duration
- Type of Coverage**
  - Occurrence or Claims-Made Basis
  - Net and Gross Considerations
- Type of Risk**
  - Tail of policy
  - Severity
  - LOB and Reinsurance Contracts

**Operational Processing and Their Effect on the Estimation Process**

- Claims Acceptance and Processing**
  - Limits and Review
  - Claims Turnover and Settlement
  - Lookback Period
- Claims Estimation**
  - Consistency of Reserving Practices
  - Significant Data Sets
  - Internal versus Outsource
  - DCC and LAE
- Claims Settlement**
  - Enhanced DCC
  - Claims Turnover and Settlement
  - Review of Development
  - Reinsurance Eligibility

56 © Armanino LLP | armaninoLLP.com 

56

---

---

---

---

---

---

---

---

---


---

---

---

**Auditing Estimates: Understanding "Risk" Characteristics & Methodologies**

Methodology	Basis (Simplified for Auditors)
Loss Extrapolation	
Paid Loss	Uses only paid losses. Case-basis reserves are not considered.
Incurred Loss	Uses paid losses plus case-basis reserves.
Frequency Severity	Uses various claim count and average cost per claim data on either a paid or an incurred basis.
Loss Ratio	Uses various forms of expected losses in relation to premiums earned.
Bornhuetter-Ferguson	Uses a combination of the loss ratio method and paid or incurred loss development factors to estimate reserves.

57 © Armanino LLP | armaninoLLP.com 

57

---

---

---

---

---

---

---

---

---

---

---

---

Commercial Auto: Changes that effect Market Risk

**Zurich, Commercial Auto Insurers face an environment of continuing challenges, Article | August 11, 2021**

- **Smartphones** - Nearly 9% of all driving fatalities reported in 2019 were deemed "due to distraction"
- **Legal Cannabis** - According to data from the National Highway Transportation Safety Administration (NHTSA), the percentage of fatally injured drivers who tested positive for drugs rose from 25% in 2007 to 42% in 2016, and marijuana presence doubled in this time frame.
- **Worsening Crash Severity** - As the coronavirus pandemic impacted business activity during 2020, VMT declined abruptly. However, fatalities per VMT increased by more than 23% year on year. Overall, motor vehicle fatalities rose 5%.
- **Rising Repair Costs** - The increased use of electronics, from onboard computer technology to multiple sensors for collision avoidance, automatic braking, and parking assistance, has radically altered the complexity and costs of auto physical damage claims. A report in Car & Driver magazine<sup>6</sup> found that 40% of the value of a new car purchased in 2020 was accounted for in sophisticated, onboard electronics.

© Armanino LLP | armaninoLLP.com



58

---

---

---

---

---

---

---

---

---

---

Commercial Auto: Changes that effect Market Risk

**Zurich, Commercial Auto Insurers face an environment of continuing challenges, Article | August 11, 2021**

- **Skilled Driver Shortage** - According to one study, 57% of today's experienced drivers are over age 45, while 23% are over age 55.<sup>7</sup> Younger drivers are not entering the workforce in numbers sufficient to meet demand. Companies will be faced with the duality of either dramatically increasing payrolls to outbid competitors or hiring younger, less experienced drivers.
- **Social Inflation** - While the claims costs of fatalities involving trucking had remained relatively stable until 2014, around 2015 personal injury attorneys began to get much better at going after transportation accounts. One study indicated that the average verdict size for lawsuits above \$1 million involving a truck crash increased nearly 1,000% from 2010 to 2018, rising from \$2.3 million to \$22.3 million.

© Armanino LLP | armaninoLLP.com



59

---

---

---

---

---

---

---

---

---

---

Commercial Auto: Changes that effect Market Risk

**ATRA, Study: Trial Lawyers Spent \$1.4 Billion on Advertising in 2021 | February 22, 2022**

- **Potential for "Increase in Frequency of Claims"** - The number of ads aired by trial lawyer groups across local and cable television, radio, and outdoor billboards has increased more than 30% since 2017.

**Milliman, Keep on trucking: COVID-19 and its Impact on Commercial Auto**

- **Closure of Rest Stops**
- **Collision Frequency and Unemployment Rate, Inverse Relationship**

**Other**

- **Enhanced DCC Practices in Response to Social Inflation**
- **State-by-State changes in Legislation**

© Armanino LLP | armaninoLLP.com



60

---

---

---

---

---

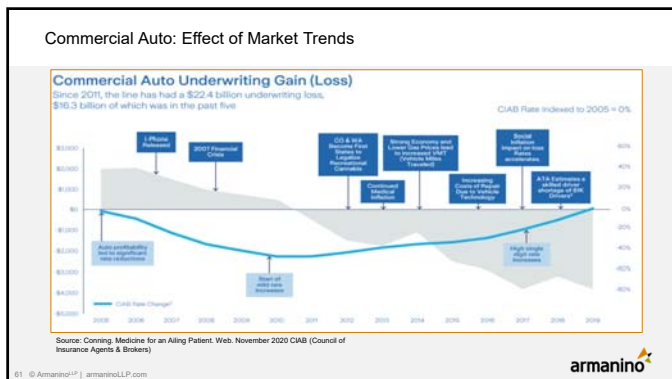
---

---

---

---

---



61

---

---

---

---

---

---

---

---

---

---

### Audit Considerations and Changes to Market Risk

- **Loss Picks and Disaggregation** – If risk profile has changed, should management assess ultimate for change in market risks? Does estimate reflect potential historical bias?
- **Adverse Development** - How has management tabulated the underlying cause of adverse development **AND** how have they responded appropriately? How does management define a "trend"?
- **Increase Cost of Reinsurance (Claims Made Coverage)** – How does management tabulate the effect of reinsurance, hardening of market, and other factors that result in an increase in ceded reinsurance premiums?
- **Premium Deficiency Reserves** – See above. How is management disaggregating changes to market risk when assessing if Unearned Premiums are sufficient to meet unpaid policy holder obligations?
- **Changes in Loss Data Attributes** - DCC, delay in settlement of claims due to severity, increase in frequency – how are these being evaluated and reflected in ultimate?

armanino

62

---

---

---

---

---

---

---

---

---

---

### Future Considerations

63

---

---

---

---

---

---

---


---

---

---

### Alternative Fuel Vehicles

- Biodiesel
- Hydrogen
- Renewable natural gas
- Ethanol
- Propane
- Electric



PINNACLE ACTUARIAL RESOURCES 64

64

---

---

---

---

---

---

---

---

### Autonomous Vehicles

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE) AUTOMATION LEVELS

0	1	2	3	4	5
<b>No Automation</b> Zero autonomy: the driver performs all driving tasks.	<b>Driver Assistance</b> Vehicle is controlled by the driver, but driver-aiding control features may be included in the vehicle design.	<b>Partial Automation</b> Vehicle has combined automated functions, like acceleration and steering, but the driver must remain engaged with the driving task and monitor the environment at all times.	<b>Conditional Automation</b> Driver is a necessity, but is not required to monitor the environment. The driver must be ready to take control of the vehicle at all times with notice.	<b>High Automation</b> The vehicle is capable of performing all driving functions under certain conditions. The driver may have the option to control the vehicle.	<b>Full Automation</b> The vehicle is capable of performing all driving functions under all conditions. The driver may have the option to control the vehicle.

Source: www.nhtsa.gov/technology-innovation/automated-vehicles-safety

PINNACLE ACTUARIAL RESOURCES 65

65

---

---

---

---

---


---

---

---

### Autonomous Vehicles – Hurdles

- Public acceptance
- Regulatory buy-in
- Commercial implementation



PINNACLE ACTUARIAL RESOURCES 66

66

---

---

---

---

---

---

---

---

**Commercial Auto Takeaways**

- Changing mix of business types, insured vehicles and options for insurance
- Pricing and reserving commercial auto takes specific expertise
- Socioeconomic conditions, emerging vehicle technology and impact

67

---

---

---

---

---

---

---

---

Questions

68

---

---

---

---

---

---

---

---

**Thank You**

**Gregory W. Fears Jr., FCAS, MAAA, ARM**

309.807.2316  
gfears@pinnacleactuaries.com

**Michael Brannon, FCAS, MAAA, CPCU, AR**

402.494.7372  
m.brannon@gwccnet.com

**Christian Tieman, CPA**

314.983.1352  
christian.tieman@armaninollp.com

69

---

---

---

---

---

---

---

---