The Changing Used Vehicle Market

And its impact on underwriting and pricing vehicle insurance

>>

Tuesday May 15 2018

The Used Car Market has Changed
Not all Used Cars are Quality Products

>> The used car market plays a larger role in car buying

>> Not all used cars are clean

>> Flooded, Salvaged, Totaled etc…

>> "Compromised" or "Previously Damaged" Used Vehicles

>> Have higher loss ratios and pure premiums

>> 5 to 7% of used vehicles are 'Compromised'

>> Direct Writers & Non-Standard show higher percentages

>> "Compromised Vehicles" can impact a carrier's bottom line by 1 or 2 points

>> **More Individuals buying Used Vehicles**
  >> **First car for young people**
  >> **Only vehicle some can afford**

>> **Over 70% of vehicles sold each year are previously owned**

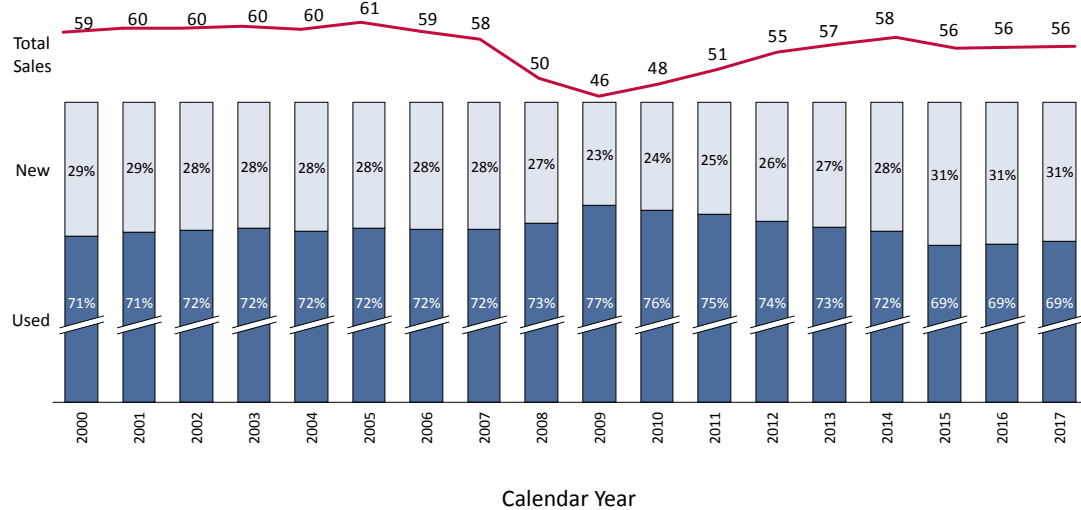>> **More previously owned vehicles moving into the market**
  >> **Avis and Hertz**
    >> **Hurt by Uber and Lyft are selling off their fleets in 2017**
  >> **Good time to buy a used vehicle.**
    >> **Prices lower in 2016 wholesale prices down by 0.6%**
    >> **Prices higher in 2017 wholesale prices up by 6.0% - driven by hurricane losses & higher truck prices**
      >> **Source: Cox Automotive Market Report 2018**

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Vehicle Sales: Total and New vs. Used Share

Total Sales

Calendar Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total	59	60	60	60	60	61	59	58	50	46	48	51	55	57	58	56	56	56
New	29%	29%	28%	28%	28%	28%	28%	28%	27%	23%	24%	25%	26%	27%	28%	31%	31%	31%
Used	71%	71%	72%	72%	72%	72%	72%	72%	73%	77%	76%	75%	74%	73%	72%	69%	69%	69%

Calendar Year

Auto Auctions: Consistently a major source of Used Vehicles

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
(line)	43	44	43	44	43	41	37	36	37	39	41	41	42	38	39
Auctions	39%	38%	38%	36%	38%	39%	47%	42%	38%	35%	36%	37%	38%	42%	42%
All Other	61%	62%	62%	64%	62%	61%	53%	58%	62%	65%	64%	63%	62%	58%	58%
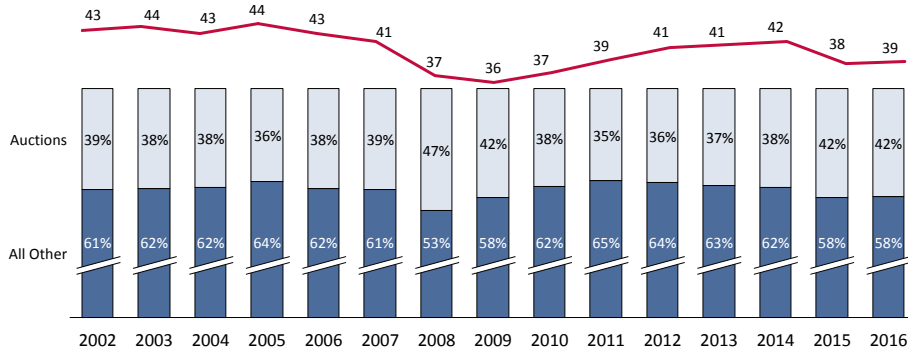
Where do the auction vehicles come from

>> Vehicle Consignment Sources
>> Dealer Consignment - 44.3%
>> Fleet/Lease Consignment - 43.7%
>> Factory Consignment - 8.9%
>> Other Sources - 3.1%

The automobile auction market is a multi-billion dollar a year industry which is helpful making the used vehicle efficient.

What are "Compromised Vehicles"?

>> Salvage Vehicles
>> A high percentage of rear end collisions in first 30 to 40 days of policy inception

2007 Mercedes-Benz S Class S550

VIN: WDDNG71X27A030388	**Class:** Upscale - Luxury
Year: 2007	**Engine:** 5.5L V8 SFI
Make: Mercedes-Benz	**Country of Assembly:** Germany
Model: S Class S550	**Vehicle Age:** 8 year(s)
Style/Body: Sedan 4D	**Calculated Owners:** 6

Date	Location		Source	Event
08/13/2014	OAKLAND, CA		Motor Vehicle Dept.	TITLE SALVAGE
10/24/2014	CA	118,538	Motor Vehicle Dept.	ODOMETER READING FROM DMV
11/07/2014	ROSEVILLE, CA		Motor Vehicle Dept.	TITLE REGISTRATION EVENT/RENEWAL
11/07/2014	CA		Motor Vehicle Dept.	SALVAGE

Cut and Shut Vehicles

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Buyers' Concerns – Totaled Vehicle

» Totaled Vehicle
»   Totaled by insurance carrier

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Buyers' Concerns – Rebuilt Vehicle
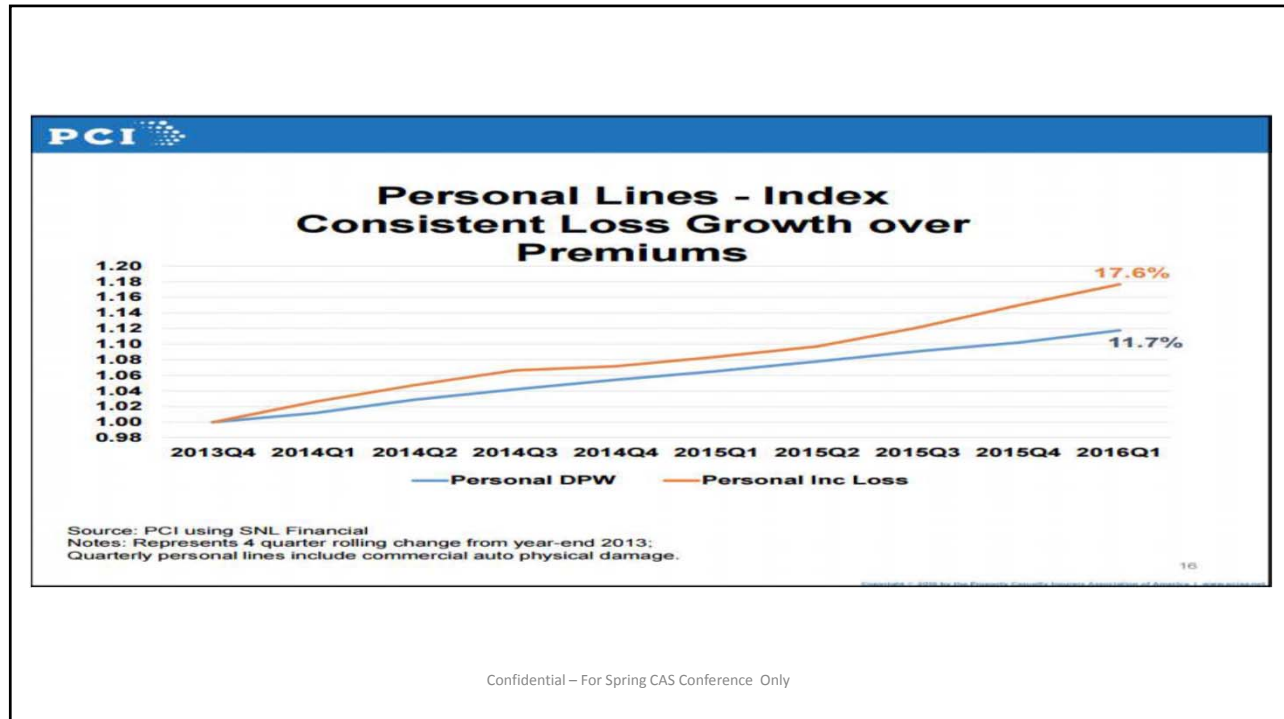
> >> Vehicle verification – Same Vehicle as previous slide

>> **Flood Vehicles**
>> **Higher percentage of Compromised Vehicles after a natural disaster**
>> **Flood vehicles shipped to other parts of the country after a flood.**
>> **Texas – Harvey, Florida – Irma**
>> **These vehicles will turn up for years to come**
>> **Insurance Carriers may crush these vehicles**

Personal Lines - Index Consistent Loss Growth over Premiums

Personal DPW — Personal Inc Loss

17.6%
11.7%

Source: PCI using SNL Financial
Notes: Represents 4 quarter rolling change from year-end 2013;
Quarterly personal lines include commercial auto physical damage.

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"Compromised Vehicles" = Higher Loss Costs

>> **Impacts all Coverages**
>> Crumple Zones aren't as strong
>> Coke can example
>> **Real World Example of impact of "Compromised Vehicles"**
>> California example
>> Non-standard unit of top 10 carrier

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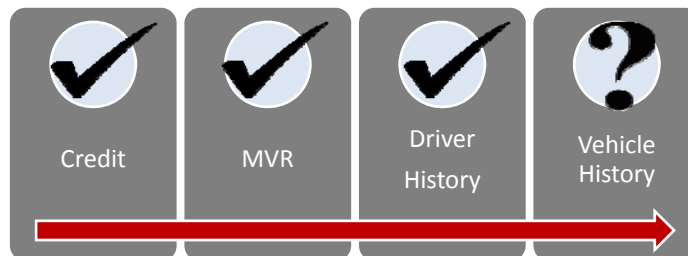Confidential – For Spring CAS Conference Only

Top 5 – California – Non-Standard Sample - March 2015

Severe Prior Damage	EP	% EP	Earned Car Years	Ult Losses	LR	LR Rel	Selected Rel
BI	$ 48,777,547	26.57%	218,724	25,895,442	53.09%		
N	$ 47,817,826	26.05%	213,655	22,846,744	47.78%	1.00	1.00
Y	$ 959,721	0.52%	5,068	3,048,698	317.67%	6.65	1.30
CL	$ 51,602,504	28.11%	115,077	29,861,629	57.87%		
N	$ 51,063,744	27.82%	113,829	25,548,190	50.03%	1.00	1.00
Y	$ 538,761	0.29%	1,248	4,313,439	800.62%	16.00	1.30
CP	$ 20,819,305	11.34%	115,218	9,866,086	47.39%		
N	$ 20,553,373	11.20%	113,967	8,720,700	42.43%	1.00	1.00
Y	$ 265,932	0.14%	1,251	1,145,387	430.71%	10.15	1.30
MP	$ 2,125,133	1.16%	29,560	1,045,493	49.20%		
N	$ 2,085,148	1.14%	29,070	925,022	44.36%	1.00	1.00
Y	$ 39,985	0.02%	489	120,471	301.29%	6.79	1.30
PD	$ 50,909,394	27.73%	218,779	31,576,878	62.03%		
N	$ 49,797,852	27.13%	213,710	28,810,149	57.85%	1.00	1.00
Y	$ 1,111,542	0.61%	5,070	2,766,730	248.91%	4.30	1.30
UM	$ 8,477,748	4.62%	132,399	2,873,674	33.90%		
N	$ 8,366,187	4.56%	129,647	2,479,582	29.64%	1.00	1.00
Y	$ 111,562	0.06%	2,752	394,091	353.25%	11.92	1.30
UP	$ 856,040	0.47%	44,367	495,353	57.87%		
N	$ 821,706	0.45%	42,714	453,628	55.21%	1.00	1.00
Y	$ 34,334	0.02%	1,653	41,725	121.53%	2.20	1.30
TOTAL	$ 183,567,671	100%	874,124	101,614,555	55.36%		

Vehicle History Reports analogous to other U/W Reports

Credit   MVR   Driver History   Vehicle History

>> Analogous to an individual's background check

>> Average Age of Vehicle today is 11 years old

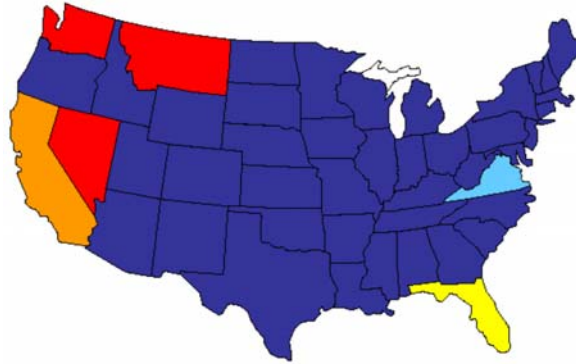>> No FCRA rating implications – 800# Customer Service available

VEHICLE VERIFICATION

Use as a Rating Variable not permitted in all states
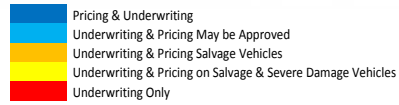
Underwritten away in a few states

>> Department of Insurance
  >> California
  >> Florida
  >> Montana
  >> Washington
  >> Virginia
  >> Nevada
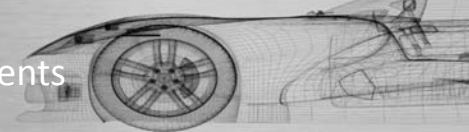
>> Customer Feedback
  >> Less than 0.05%
  >> Issues unknown at time of purchase

Pricing & Underwriting
Underwriting & Pricing May be Approved
Underwriting & Pricing Salvage Vehicles
Underwriting & Pricing on Salvage & Severe Damage Vehicles
Underwriting Only

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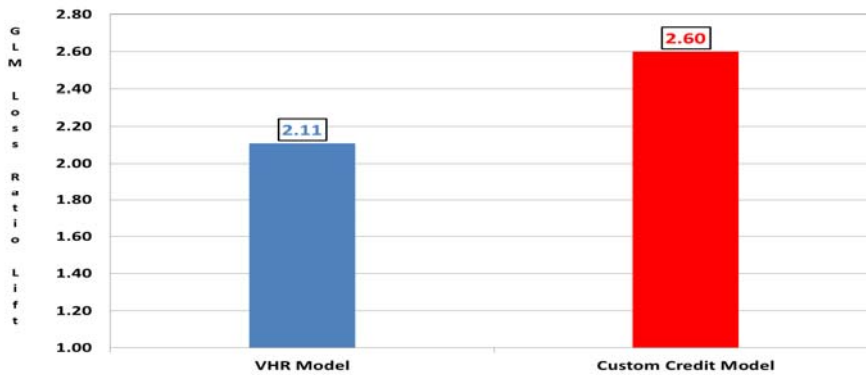Confidential – For CAS Spring Conference Only

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BRINGING SOLUTIONS TO MARKET

Modeled VHR Data Elements

GLM GENERATED VHR LOSS RATIO LIFT

NOTES:

> Lift: Highest LR relativity divided by lowest LR Index relativity.

> Loss Ratio indices were spread across 10 groupings forming a normal distribution.

> Loss Ratio Indices were generated via a Generalized Linear Modeling technique

VHR modeling provides some of the most powerful pricing segmentation available to the industry.

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BRINGING SOLUTIONS TO MARKET

AutoCheck Vehicle Risk Predictor 1.0
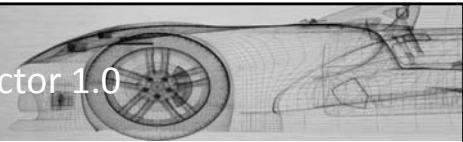
>> Model developed specifically for Automobile Insurance:

>> Compromised of 12 unique modeling variables from AutoCheck data

>> Model developed using the latest generalized linear modeling techniques

>> Modeled within a sophisticated rating plan utilizing credit and other state of the art variables

>> Model incorporates complete data set:

>> Data spans spectrum of auto insurance risk (i.e. nonstandard, ultra preferred, agency, direct, national footprint, etc.)

>> Positive model validations performed.
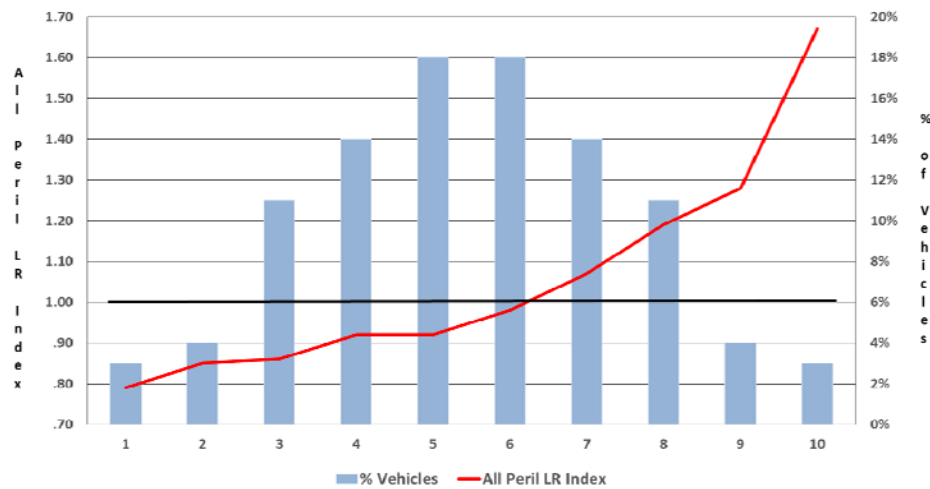
>> DOI support available covering validation of the model

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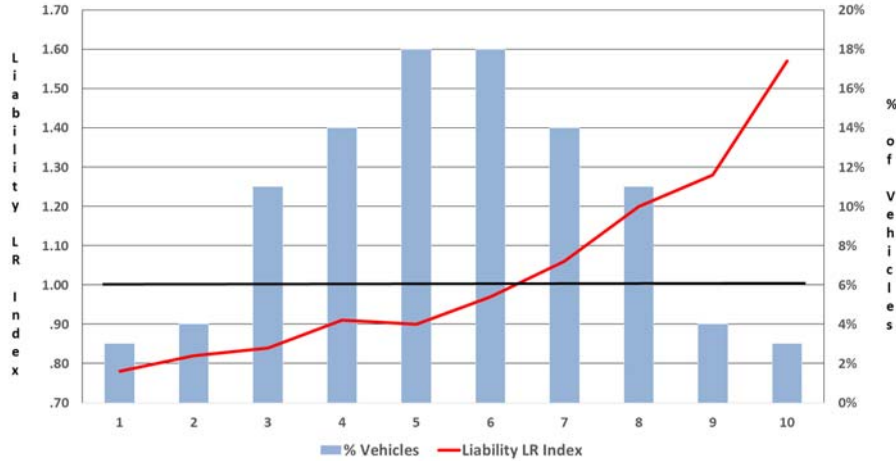## Modeled Vehicle History Data
ALL PERIL LOSS RATIO INDEX

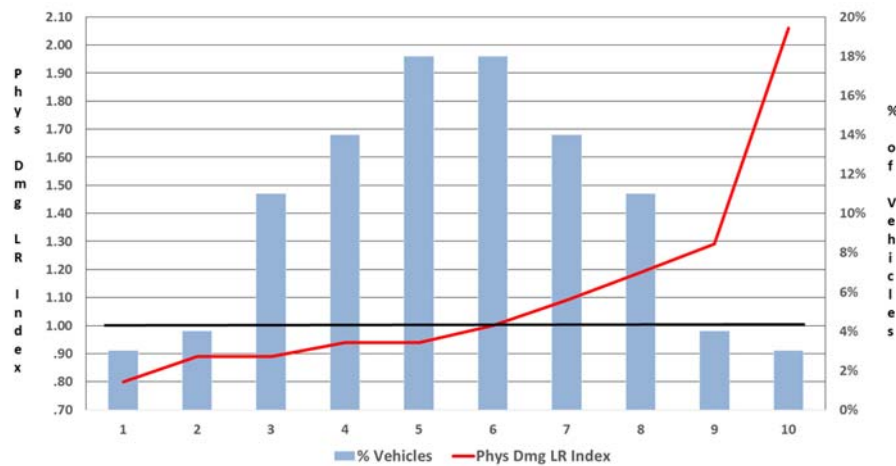| 10 Breaks	% Vehicles	All Peril LR Index
1	3%	.79
2	4%	.85
3	11%	.86
4	14%	.92
5	18%	.92
6	18%	.98
7	14%	1.07
8	11%	1.19
9	4%	1.28
10	3%	1.67
ALL	100%	Lift: 2.11

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Modeled Vehicle History Data
LIABILITY LOSS RATIO INDEX

10 Breaks	% Vehicles	Liability LR Index
1	3%	.78
2	4%	.82
3	11%	.84
4	14%	.91
5	18%	.90
6	18%	.97
7	14%	1.06
8	11%	1.20
9	4%	1.28
10	3%	1.57
ALL	100%	Lift: 2.01

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Modeled Vehicle History Data
PHYSICAL DAMAGE LOSS RATIO INDEX

10 Breaks	% Vehicles	P. Dmg LR Index
1	3%	.80
2	4%	.89
3	11%	.89
4	14%	.94
5	18%	.94
6	18%	1.00
7	14%	1.09
8	11%	1.19
9	4%	1.29
10	3%	2.06
ALL	100%	Lift: 2.58

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Thank You For Your Attention

Questions or Suggestions?

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