Survey of External Data Possibilities for Commercial Insurance

2015 CAS Ratemaking and Product Management Seminar

Commitment Beyond Numbers

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Discussion Topics

- Data Considerations
- Data Sources
  - Public Rate Filings
  - Commercial Credit
  - Geodemographic Data
  - Commercial Auto Segmentation
  - Telematics and Usage-Based Insurance
- Emerging Data Trends

Data Considerations

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Applications using external data

- Predictive Analytics
  - Requires granular data that can be linked to internal data generally at the policyholder or zip code level
  - Time match is important
  - Consider whether external data is intuitively related to loss costs
- Capital Modeling/Forecasting
  - The variability of future estimates should be understood
  - Government sources are readily available and generally best for most applications
- Underwriting
  - Similar to predictive analytics but less structure required
  - Data should be available on demand for U/W use

Evaluating external data sources

- Applicability – Is the data applicable to your analysis?
- Availability – Will the data be available if used as part of a production environment?
- Maintenance – Will the data need to be maintained and housed internally?
- Matching – How will the data be linked to internal data?
- Value – Is the cost in terms of $ and/or resources worth the benefit achieved?

Data Sources

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Public Rate Filings Data

- Multiple sources including DOI websites and vendors
- Particularly useful for predictive analytics applications
- Rate Filing data includes:
  - Scorecard elements
  - Tier factors
- Caution! - Look for variables and magnitude, specific factors may not be applicable to your book of business

Commercial Auto Scorecard Example

Based on the following risk characteristics:

1. MVR Information
2. Average Driver Age
3. Youthful Composition
4. Length of Credit History
5. Total Number of Trades
6. Percentage of Balance Overdue of All Trades
7. Total Balance of Regular Trades
8. Number of Public Records / Collections
9. Amount of Judgment
10. Average Number of Days Balance Overdue in the Past 3 Months
11. Number of Inquiries in the Past 9 Months
12. Years in Business (when financial information is not available)
13. Industry Classification
14. Percentage of TTT Power Units
15. Prior 3-Year Loss Frequency by Size of Risks
16. Other risk-specific characteristics that are not contemplated above

use the applicable tier factor as a final step prior to rounding to determine the final rates.

Commercial Auto Tier Factors – Example 1

Tier	Factor		Tier	Factor		Tier	Factor
1	0.40		18	0.81		35	1.66
2	0.42		19	0.85		36	1.73
3	0.43		20	0.89		37	1.81
4	0.45		21	0.92		38	1.88
5	0.47		22	0.96		39	1.96
6	0.49		23	1.00		40	2.05
7	0.51		24	1.05		41	2.13
8	0.54		25	1.09		42	2.23
9	0.56		26	1.14		43	2.32
10	0.58		27	1.19		44	2.42
11	0.61		28	1.24		45	2.52
12	0.63		29	1.29		46	2.63
13	0.66		30	1.35		47	2.74
14	0.69		31	1.40		48	2.86
15	0.72		32	1.46		49	2.98
16	0.75		33	1.53		50	3.11
17	0.78		34	1.59			

UNINSURED/UNDERINSURED MOTORISTS Factor is 1.00.

Commercial Auto Tier Factors – Example 2

C. TIERED RATING

1. Tier is determined at policy inception, renewal or anniversary based on the following characteristics. Number of "power units", length of time insured with company, accident history, age of driver(s), Motor Vehicle Record of driver(s), management safety ranking, and driver retention.

Tiered Rating Multipliers

TIERED RATING MULTIPLIERS									
Tier	**Multiplier**	**Tier**	**Multiplier**	**Tier**	**Multiplier**	**Tier**	**Multiplier**	**Tier**	**Multiplier**
1	0.401	**10**	0.557	**19**	0.774	**28**	1.076	**37**	1.495
2	0.416	**11**	0.578	**20**	0.803	**29**	1.116	**38**	1.551
3	0.431	**12**	0.599	**21**	0.833	**30**	1.158	**39**	1.609
4	0.447	**13**	0.622	**22**	0.864	**31**	1.201	**40**	1.669
5	0.464	**14**	0.645	**23**	0.896	**32**	1.245	**41**	1.731
6	0.481	**15**	0.669	**24**	0.929	**33**	1.292	**42**	1.795
7	0.499	**16**	0.694	**25**	0.964	**34**	1.340	**43**	1.862
8	0.518	**17**	0.719	**26**	1.000	**35**	1.390	**44**	1.932
9	0.537	**18**	0.746	**27**	1.037	**36**	1.442	**45**	2.004

BOP Tier Factors Example

Master Pac Tier Rating Factors

Pricing Track	Pricing Factor	Pricing Track	Pricing Factor
1	.52	21	1.14
2	.55	22	1.16
3	.58	23	1.20
4	.61	24	1.25
5	.64	25	1.30
6	.67	26	1.35
7	.70	27	1.40
8	.73	28	1.45
9	.76	29	1.50
10	.79	30	1.60
11	.82	31	1.70
12	.85	32	1.80
13	.88	33	1.90
14	.91	34	2.00
15	.94	35	2.10
16	.97	36	2.25
17	1.00	37	2.40
18	1.03	38	2.55
19	1.06	39	2.70
20	1.10	40	2.85

Tier elements include

- Claims history
- Years in business
- Insured value
- Credit data
- Pay Plan/History
- Many others….

BOP Scorecard Example – Part 1

Risk Characteristic Pricing Element	Response	Point Value
Years in Business at this Location	New in Business	5
	Less than 1 Year	4
	1-2 Years	3
	2-3 Years	1
	3-4 Years	0
	4-5 Years	-1
	5-6 Years	-2
	6 Years or More	-3
Responsible for Parking Lot	Yes	2
	No	0
Wiring Year	25 Years or More	4
	20-24 Years	0
	11-19 Years	-2
	10 Years or Less	-4

BOP Scorecard Example – Part 2

Location of Business	Attached to Habitational Structure	10
	Stand-alone Building	3
	Strip Shopping Center	0
	Enclosed Mall	-3
Hours of Operation Open to Public	21-24 Hours	10
	16-20 Hours	5
	12-15 Hours	0
	Less than 12 Hours	-5
Percentage of Sales from Catering Services	Over 10%	10
	1-10%	5
	None	0
Total Percent of Sales from Liquor Sales	More than 20%	5
	1-20%	2
	None	0
Drive Thru	Yes	0
	No	0

Public Rate Filings Considerations

- Applicability – Rate filings can provide perspective on variables used and magnitude of score factors
- Availability – When viewed as a tool for guidance, competitor rate filings can be reliable.
- Maintenance – Regular maintenance and monitoring of competitor filings is required to keep up with revisions
- Matching – Look for scorecards and competitors that align with your book of business
- Value – Dollar cost is relatively low but filing research can be labor intensive.

Commercial Credit Data Overview

- Two main vendors:
  - Experian
  - Dun and Bradstreet
- Data Elements include:
  - Business summary (year started, number of employees, industry)
  - Financial information (sales, assets)
  - Payment history and trends (aging, late payments)
  - Public record filings (liens, judgments, UCC filings, bankruptcies)
  - Proprietary scores (Intelliscore, Paydex)
- Commercial credit assumes that financial strength and credit risk is related to insurance risk

Commercial Credit Data Challenges

- A large number of highly correlated variables
  - Number of trades 30–60 DBT and Number of trades 60–90 DBT
- Individual variables may not have an intuitive relationship to loss
  - Number of UCC filings
  - Number of trades 30+ DBT
- Data may not be available for small risks
- Use commercial credit score or develop specific insurance risk score?
- Lift is less significant relative to internal variables
- Commercial credit terminology and relationship between variables may be unfamiliar

Commercial Credit Data Considerations

- Applicability – Financial strength and credit risk are linked to insurance risk
- Availability – Credit vendors provide on-demand reports and have established track records
- Maintenance – Credit data obtained via individual reports will need to stored and any insurer models updated regularly
- Matching – Generally a match to policyholder and time period can be made under certain assumptions. Small risks may not have a credit report on file
- Value – Commercial credit shows less lift than internal variables but still significant. Also is typically already used as part of the underwriting process therefore justifying the costs of the report

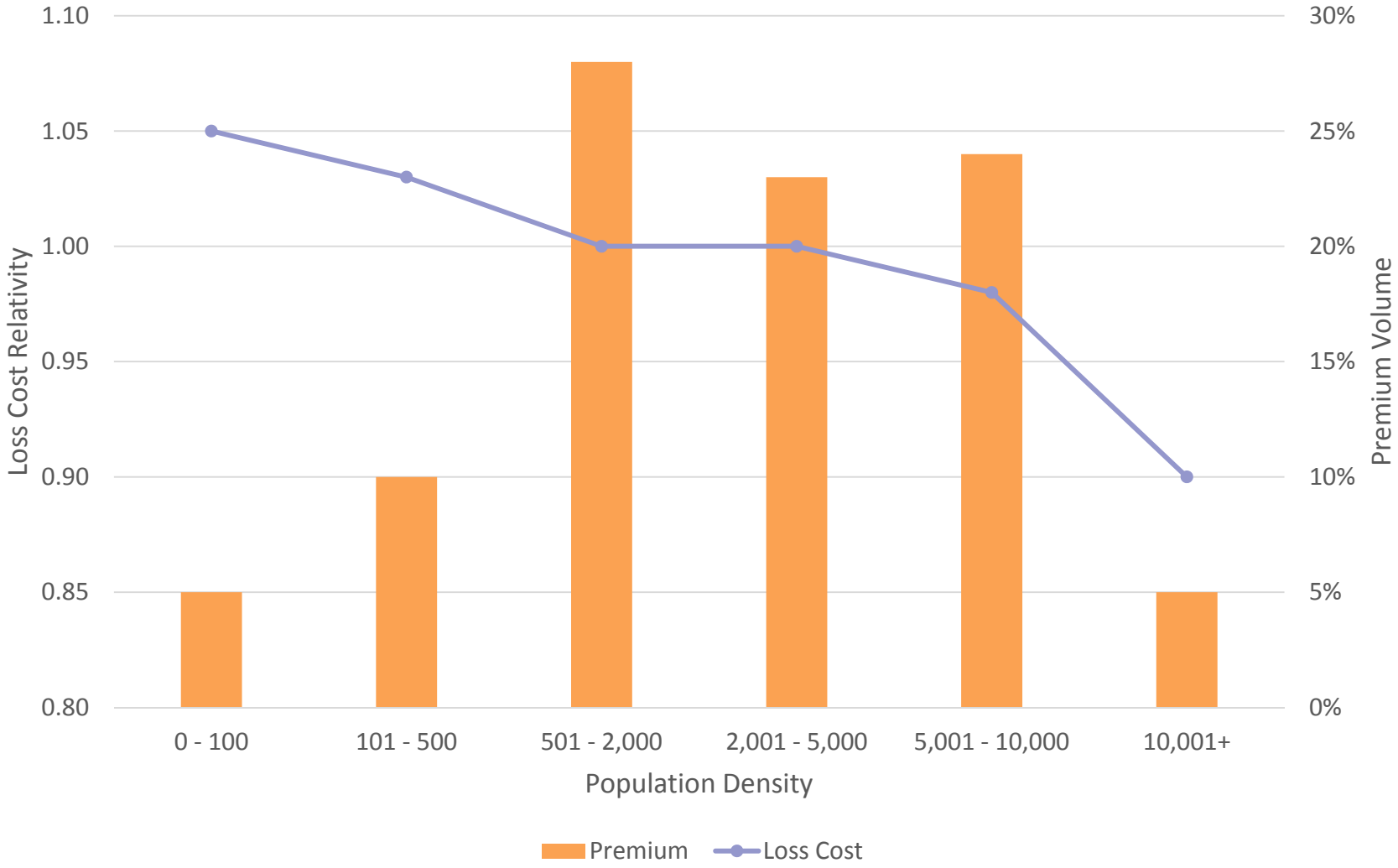
Geodemographic Data Overview

- Public Sources:
  - US Census Bureau
  - Bureau of Labor Statistics (detail at both national and state level)
- Data elements include:
  - Population summaries by age, sex, household size, education
  - Housing information regarding size, value, owner/renter and vacancies
  - Income summaries and distributions
  - Consumer expenditures
  - Workplace injury statistics
  - Economic indicators such as unemployment and productivity
- Can be viewed as an enhancement to territories

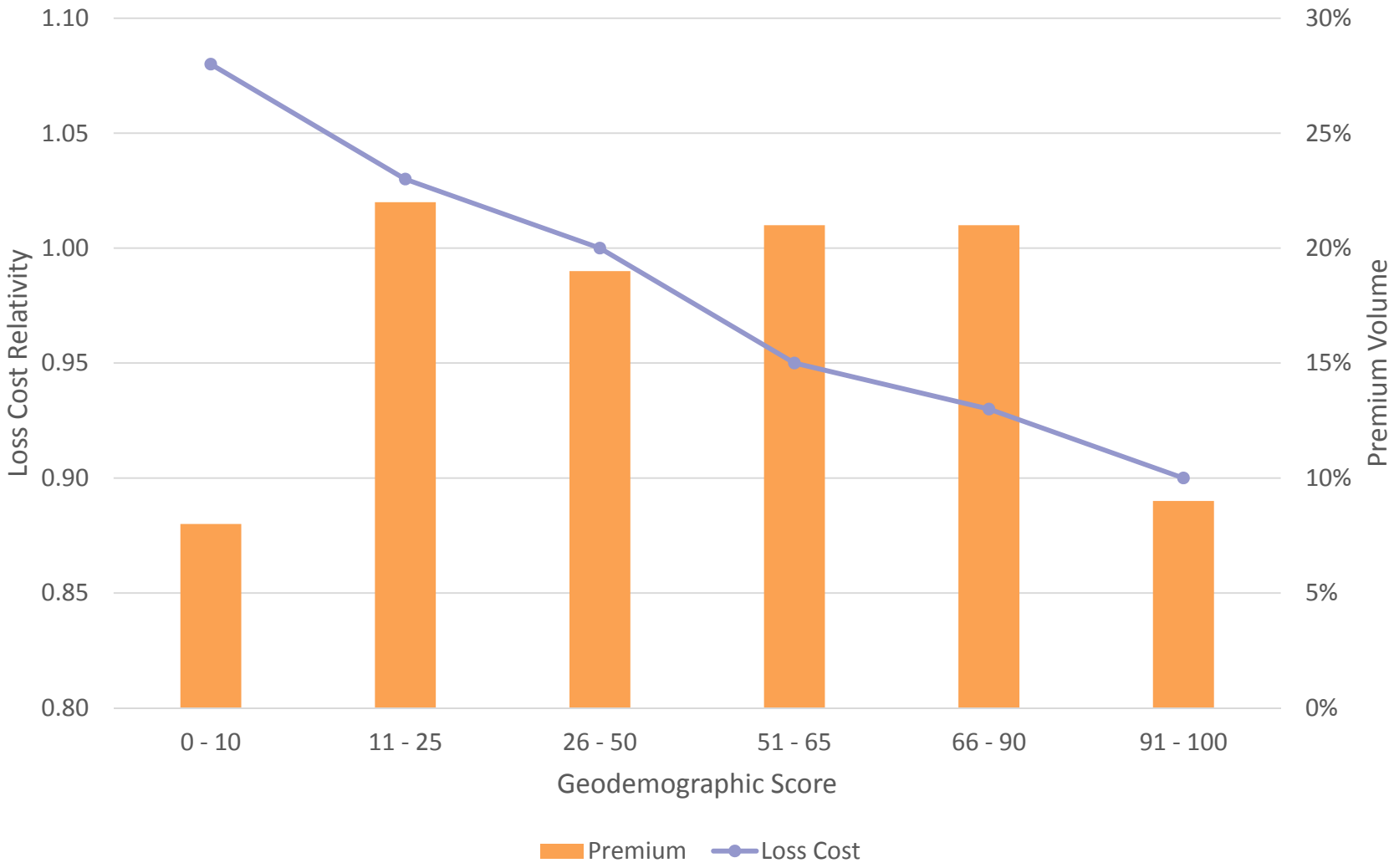
Geodemographic Data Challenges

- A large number of highly correlated variables
  - Median Age and Median Income
- Individual variables may not have an intuitive relationship to loss
  - Proportion of public transportation users
  - Proportion of vacant housing units
  - Proportion of households with no cars
- Publically available data can be difficult to work with
  - Data structure needs to be understood
  - Many vendors sell compiled data
- Lift is tepid relative to other variables

Illustrative Lift Chart of Population Density



Illustrative Lift Chart of Geodemographic Score



Geodemographic Data Considerations

- Applicability – Can be thought of as an enhancement (or introduction) to territory factors
- Availability – Data will need to stored within internal systems
- Maintenance – Changing demographics means that the data will need to be updated regularly
- Matching – Generally a match to zip code and time period can be made
- Value – While lift is generally tepid, cost is relatively low making geodemographic variables attractive as an external data source

Commercial Auto Segmentation Data

- VIN Decoding
  - Well established process
  - New products related to trailers, equipment modifications, etc.
- MVRs
  - Several vendors
  - Key question – Ordering Protocols – Who? How often?
- Prior Claims
  - Commercial C.L.U.E. gaining traction

Highway Loss Data Institute (HLDI) Data

- Affiliated with Insurance Institute for Highway Safety
- Focus on reducing the losses from crashes
  - Type of Vehicle
  - Coverage-level
  - Safety Features
- Public Information & ratings
- Potential uses:
  - Vehicle Segmentation & Symboling
  - Policy Discounting
  - Vehicle Safety Outlook – Risk Management
  - Impact of Legislative Changes

HLDI Composite – Losses by Class

Results for model year 2011-13 ▾ MIDSIZE ▾ FOUR-DOOR CARS ▾

Vehicle	Collision	Property damage	Compre-hensive	Personal injury	Medical payment	Bodily injury
Acura TSX	105	83	110	100	85	78
Buick Verano	96	93	88	107	121	110
Chevrolet Malibu	87	83	106	129	144	105
Chrysler 200	104	104	99	151	153	141
Dodge Avenger	113	126	100	167	176	173
Ford Fusion 2WD	106	74	116	115	114	100
Ford Fusion 4WD	100		143			
Ford Fusion hybrid	115	63	100	90		
Honda Accord	89	67	87	124	115	92
Hyundai Sonata	104	98	98	121	126	107
Hyundai Sonata hybrid	140	102	111	105	127	123
Kia Optima	115	96	108	130	137	116
Kia Optima hybrid	133	109	97	120	141	133
Mazda 6	97	113	90	126	134	136
Nissan Altima	115	83	114	139	137	104
Nissan Maxima	124	93	158	128	122	103
Subaru Legacy 4WD	88	80	105	87	92	85
Subaru Legacy with Eyesight 4WD	84					

HLDI Composite – Best & Worst

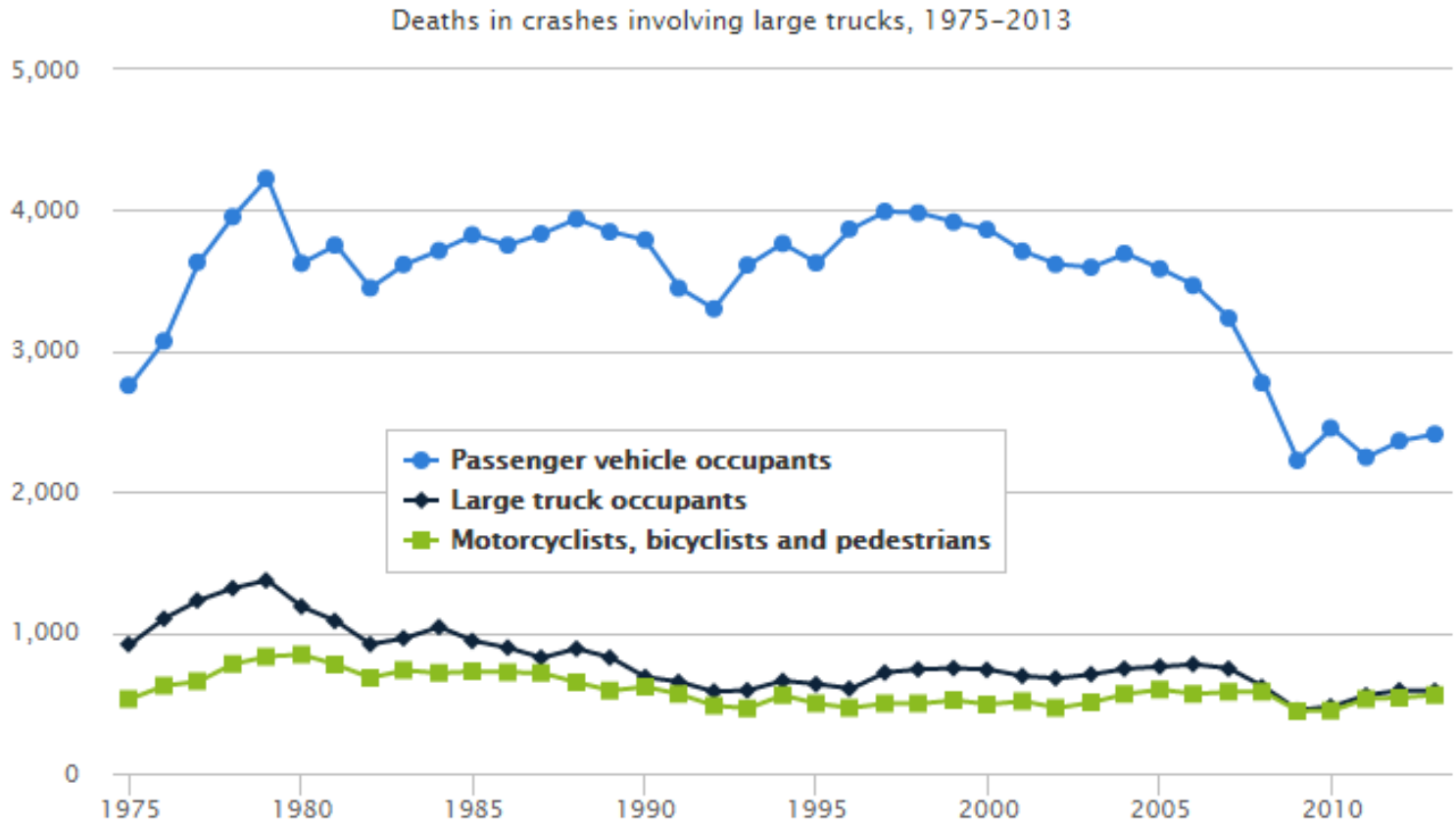
Lowest overall losses: Collision

Vehicle	Vehicle size and class	Overall losses
Jeep Wrangler 2dr SWB 4WD	Small SUV	51
Jeep Wrangler 4dr 4WD	Midsize SUV	57
Ford F-250 super cab 2WD	Very large pickup	58
Smart ForTwo convertible	Micro two-door car	59
Ford F-150 4WD	Large pickup	60
Chevrolet Suburban 2500 4dr 4WD	Very large SUV	61
Dodge Ram 1500 LWB 2WD	Large pickup	61
Dodge Ram 1500 LWB 4WD	Large pickup	61
Ford F-150 2WD	Large pickup	61
Ford F-250 4WD	Very large pickup	61

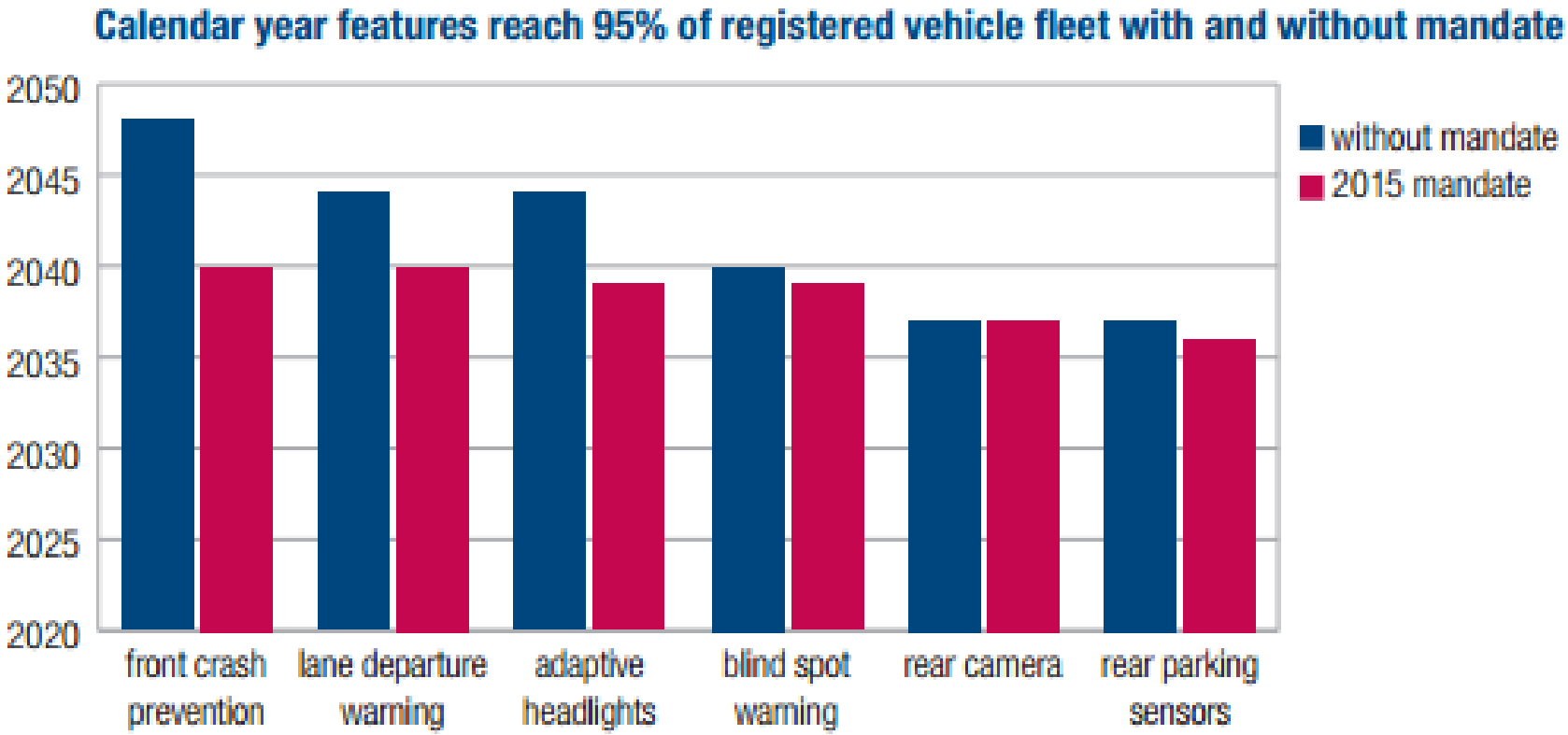
Highest overall losses: Collision

Vehicle	Vehicle size and class	Overall losses
Ferrari 458 Italia 2dr	Midsize sports car	546
Bentley Continental GT 2dr	Very large luxury car	517
Ferrari California convertible	Midsize sports car	427
Maserati Granturismo convertible	Large sports car	405
Maserati Quattroporte 4dr	Very large luxury car	404
Bentley Continental GTC convertible	Very large luxury car	394
BMW X6 M 4dr 4WD	Midsize luxury SUV	380
Porsche Panamera turbo 4dr 4WD	Large sports car	353
Maserati Granturismo 2dr	Large sports car	322
Nissan GT-R 2dr 4WD	Midsize sports car	318

HLDI – Fatality Information



HLDI – Predicted Availability of Safety Features



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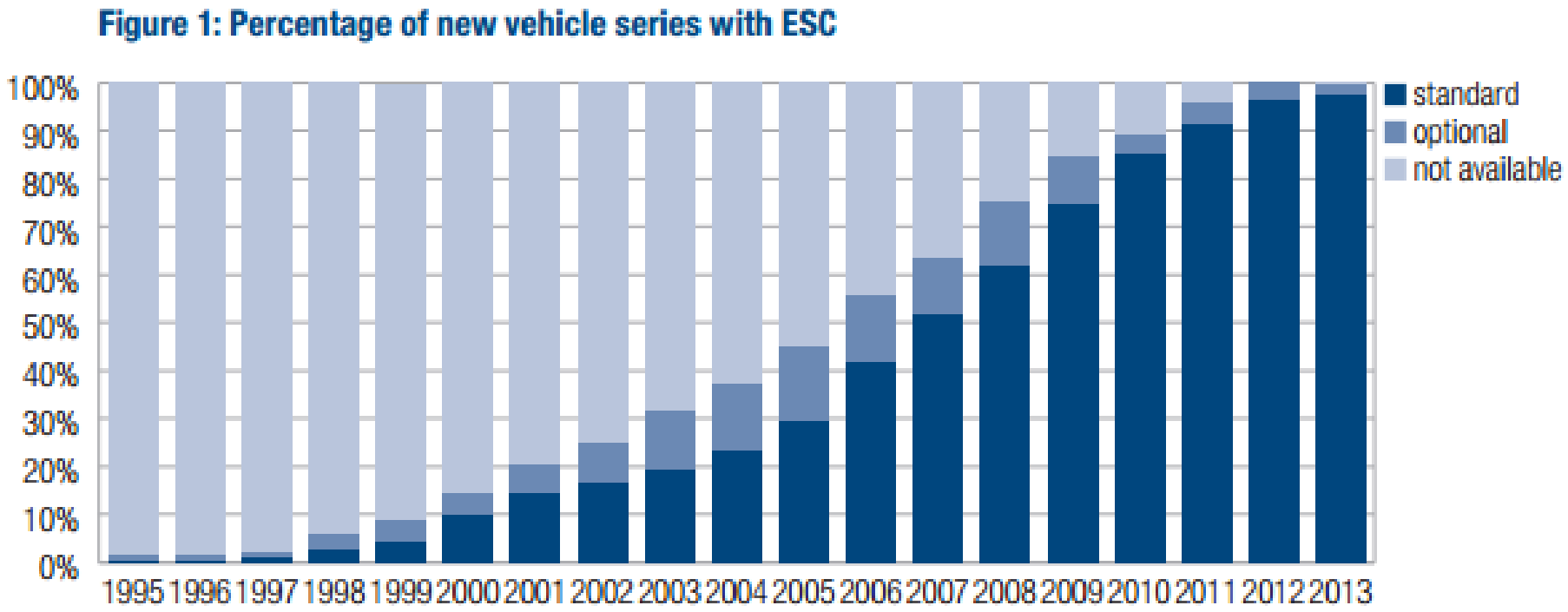

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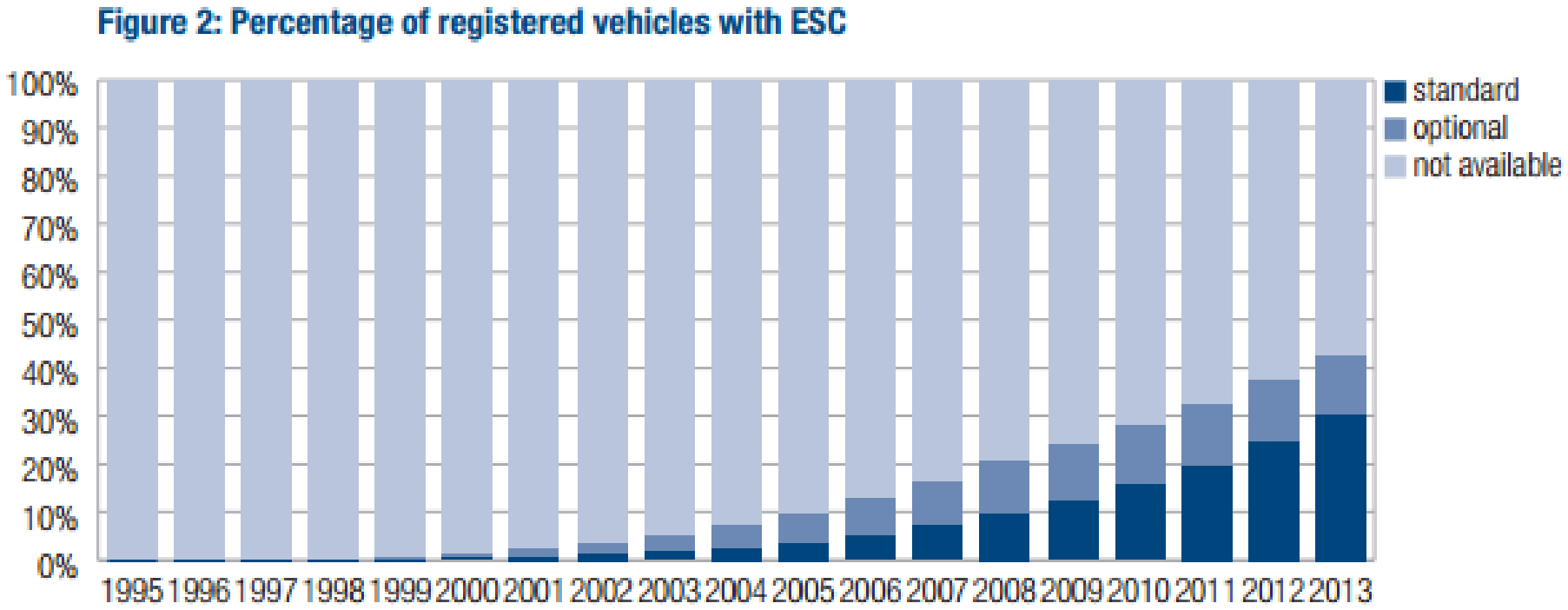

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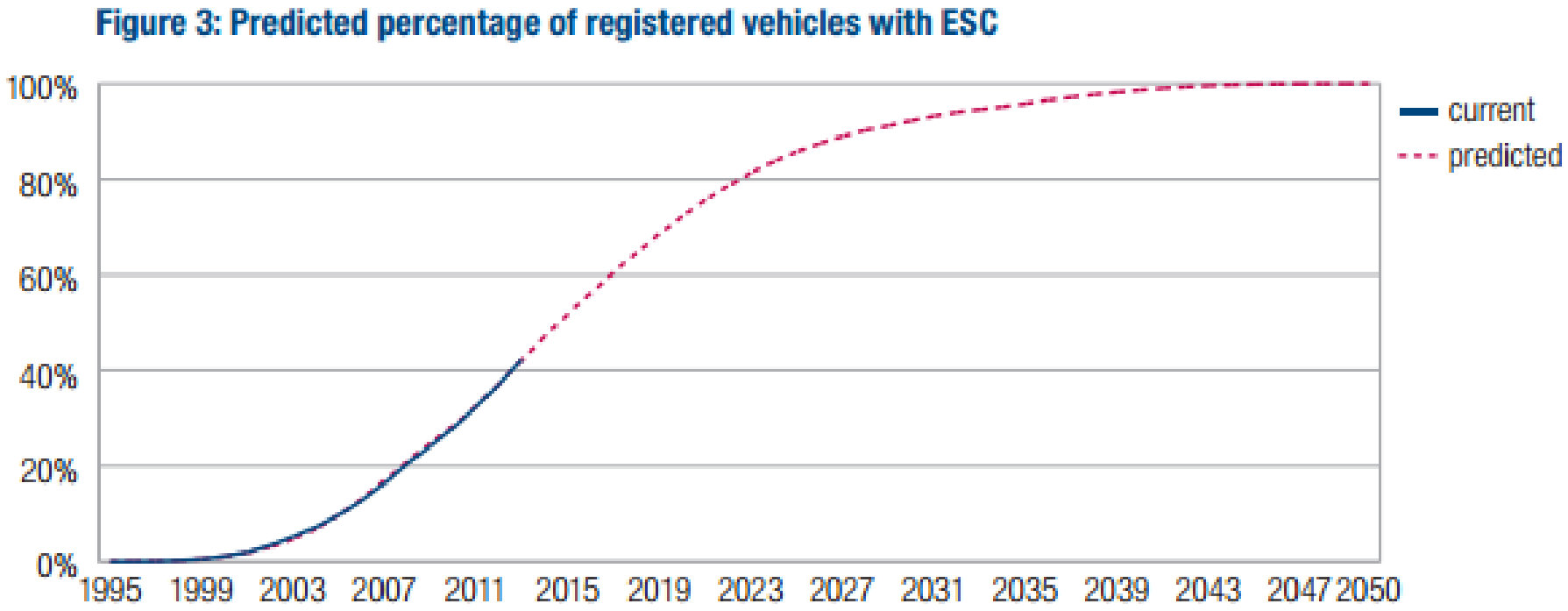

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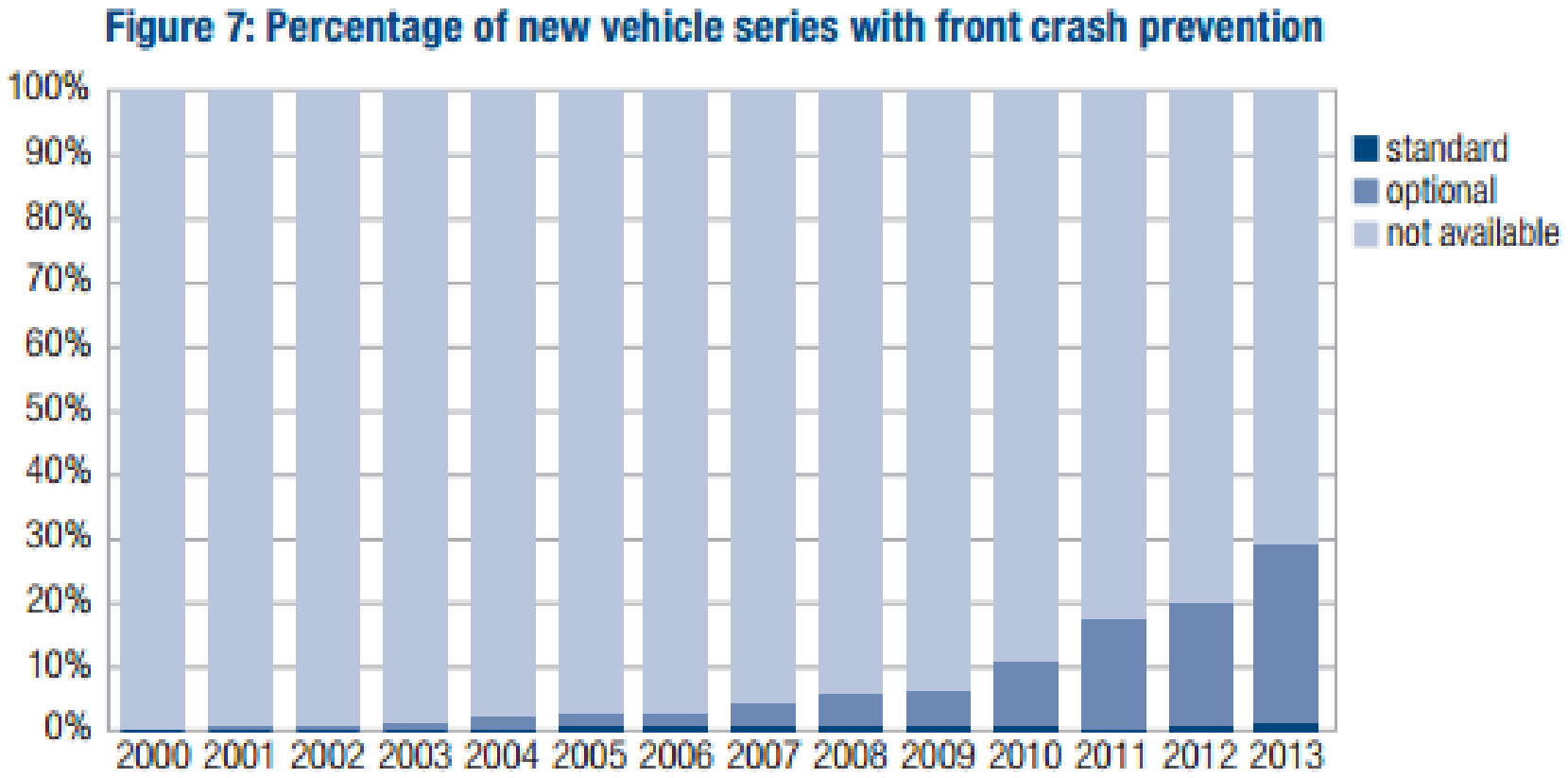

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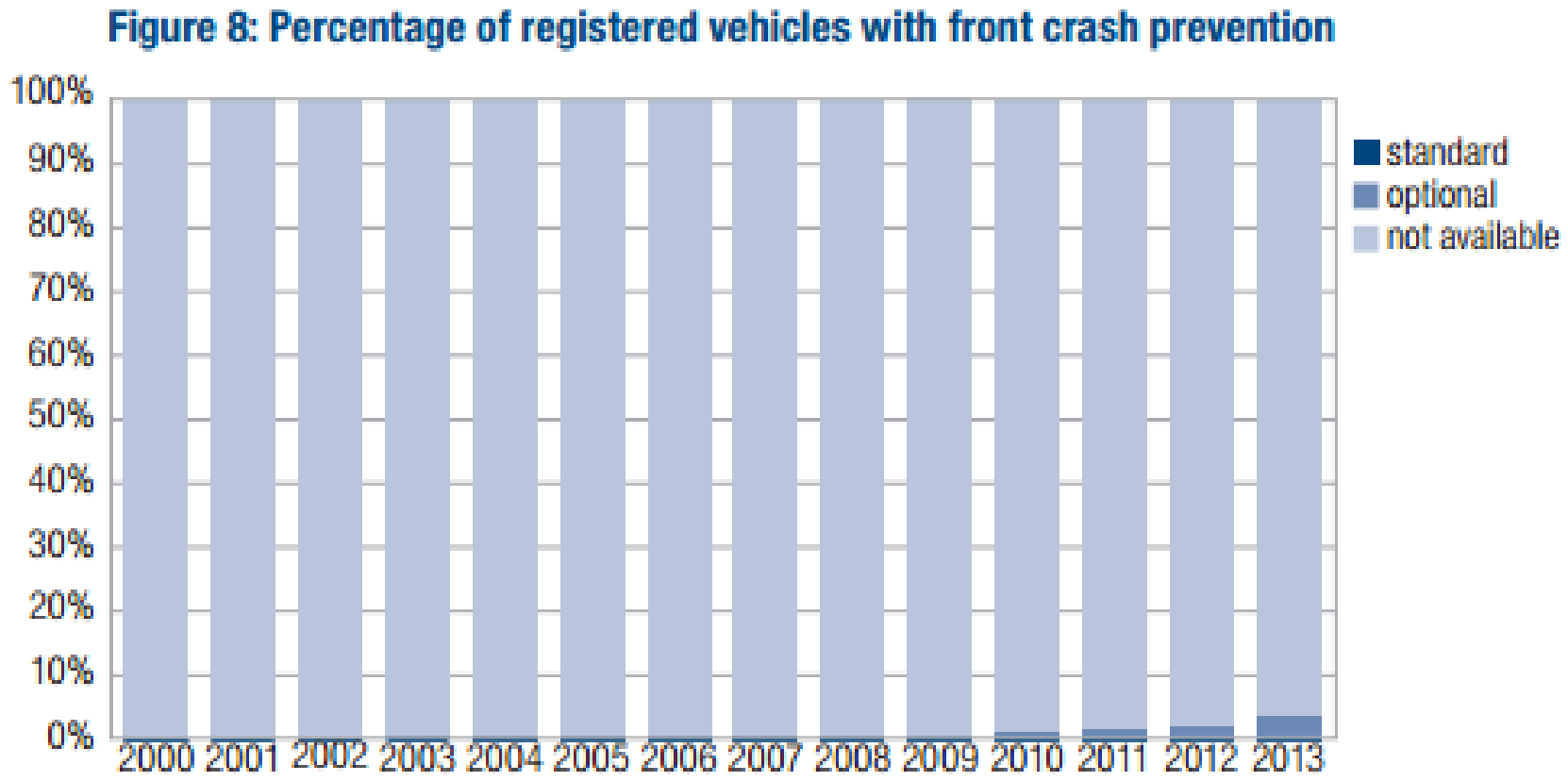

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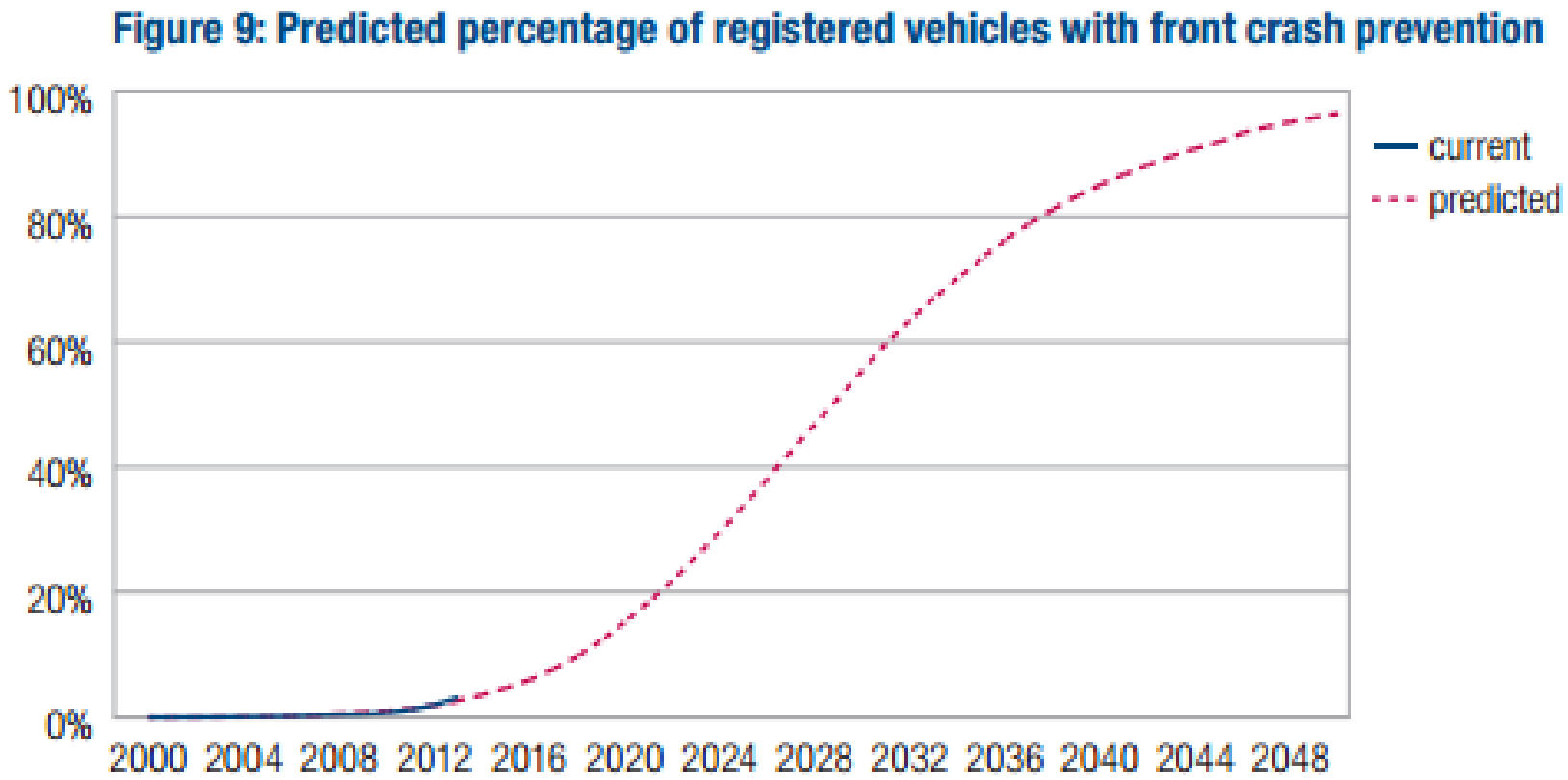
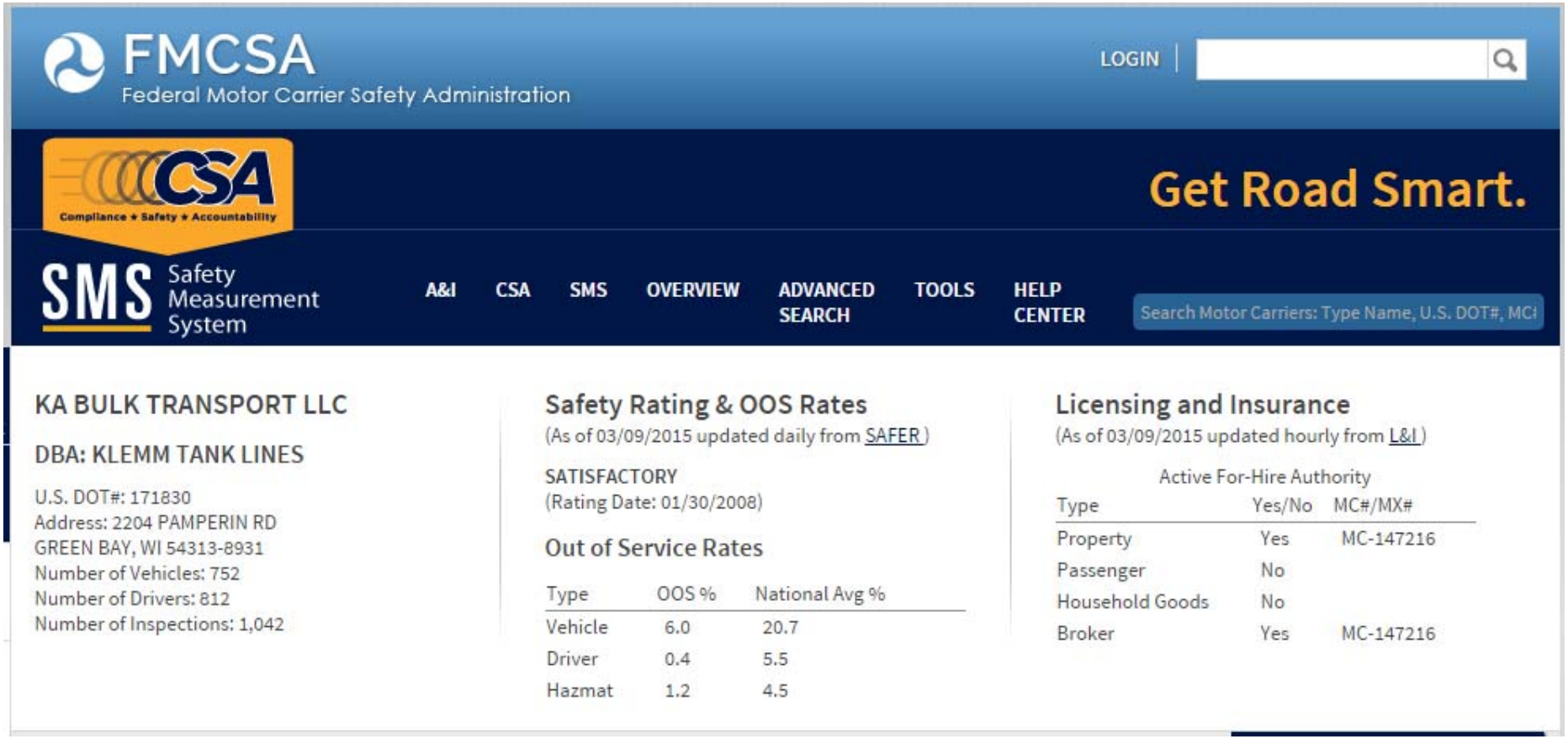


Safety Measurement System (SMS)

- Sponsored by Federal Motor Carrier Safety Administration
- Replaced prior SAFER program
- Scores companies in several categories
  - Unsafe Driving (Speeding, reckless, lane changes)
  - Fatigued Driving/Hours of Service
  - Driver Fitness/Training
  - Controlled Substances/Alcohol
  - Vehicle Maintenance
  - Cargo-Related (Spills, HazMat)
  - Crash Experience
- Publicly Available

SMS Overview



SMS Carrier Registration Detail

Carrier Registration Information as of March 23, 2012

Legal Name:	Ka Bulk Transport Llc	**Vehicle Miles Traveled:**	43,900,000
DBA Name:	Klemm Tank Lines	**VMT Year:**	2010
DOT#:	171830	**Power Units:**	592
MC or MX#:	MC-147216	**DUNS Number:**	2-320-3300
Address:	2204 Pamperin Rd Green Bay, WI 54313-8931	**Drivers:**	665
		Carrier Operation:	Interstate
Telephone:	(920) 434-6343	**Passenger:**	No
Fax:	(800) 553-6329	**Subject to Placardable HM Threshold:**	Yes
Email:	teresas@klemmtanklines.com	**HHG:**	No
		New Entrant	No

Operation Classification:

X AUTHORIZED FOR HIRE	EXEMPT FOR HIRE	PRIVATE PROPERTY
PRIVATE PASSENGER, BUSINESS	PRIVATE PASSENGER, NON-BUSINESS	MIGRANT
U. S. MAIL	FEDERAL GOVERNMENT	STATE GOVERNMENT
LOCAL GOVERNMENT	INDIAN TRIBE	OTHER

Cargo Carried:

GENERAL FREIGHT	HOUSEHOLD GOODS	METAL; SHEETS, COILS, ROLLS
MOTOR VEHICLES	DRIVE AWAY/TOWAWAY	LOGS, POLES, BEAMS, LUMBER
BUILDING MATERIALS	MOBILE HOMES	MACHINERY, LARGE OBJECTS
FRESH PRODUCE	X LIQUIDS/GASES	INTERMODAL CONTAINERS
PASSENGERS	OIL FIELD EQUIPMENT	LIVESTOCK
GRAIN, FEED, HAY	COAL, COKE	MEAT
GARBAGE, REFUSE, TRASH	U.S. MAIL	X CHEMICALS
COMMODITIES DRY BULK	X REFRIGERATED FOOD	BEVERAGES
PAPER PRODUCTS	UTILITY	FARM SUPPLIES
CONSTRUCTION	WATER WELL	OTHER

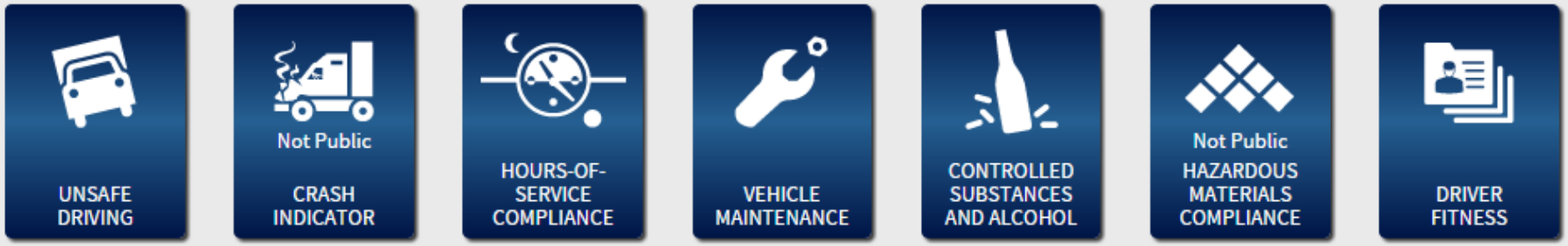
SMS BASIC Information

- Behavioral Analysis & Safety Improvement Categories (BASIC)

BASIC Status (Public View)

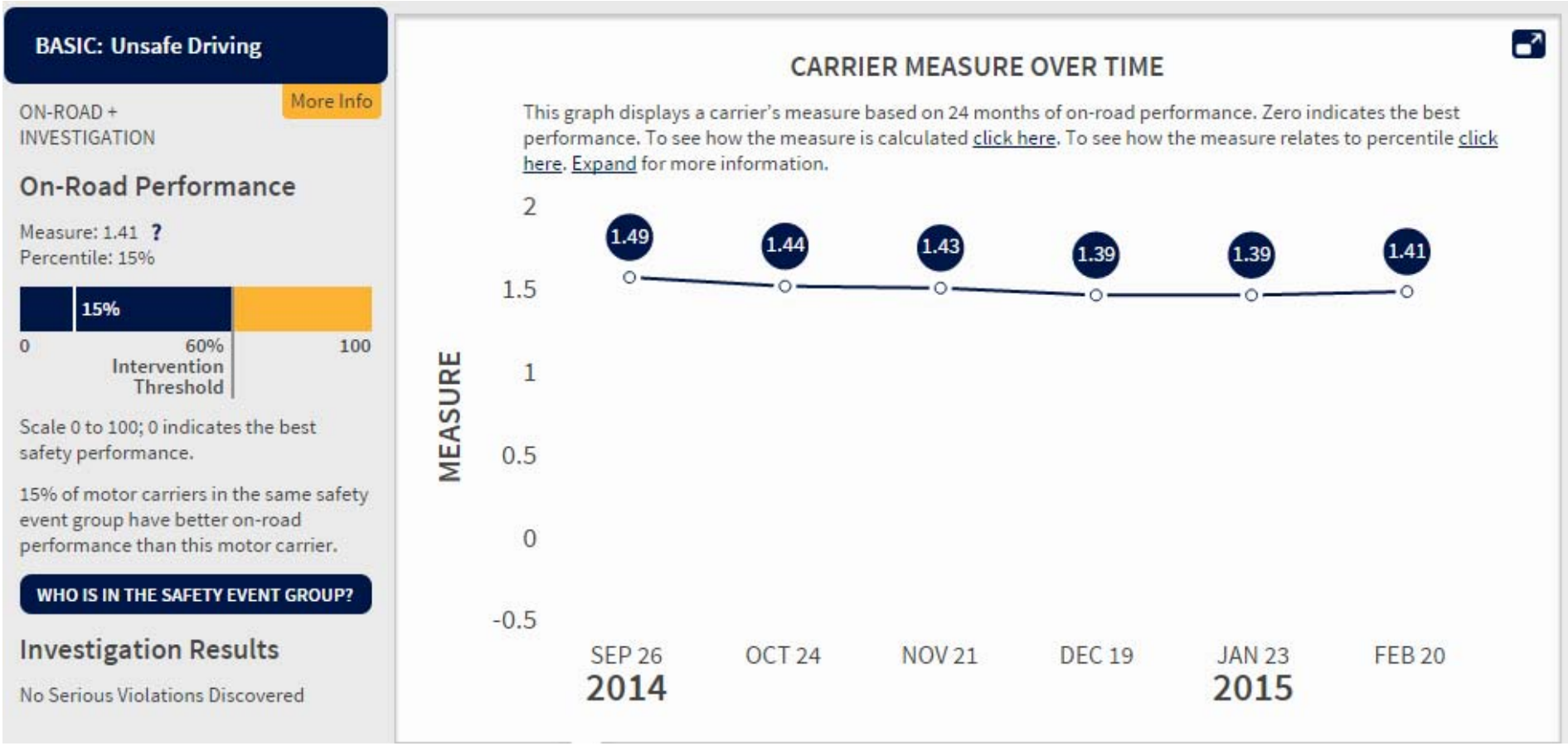
Behavior Analysis & Safety Improvement Categories (BASICs)

Based on a 24-month record ending February 20, 2015



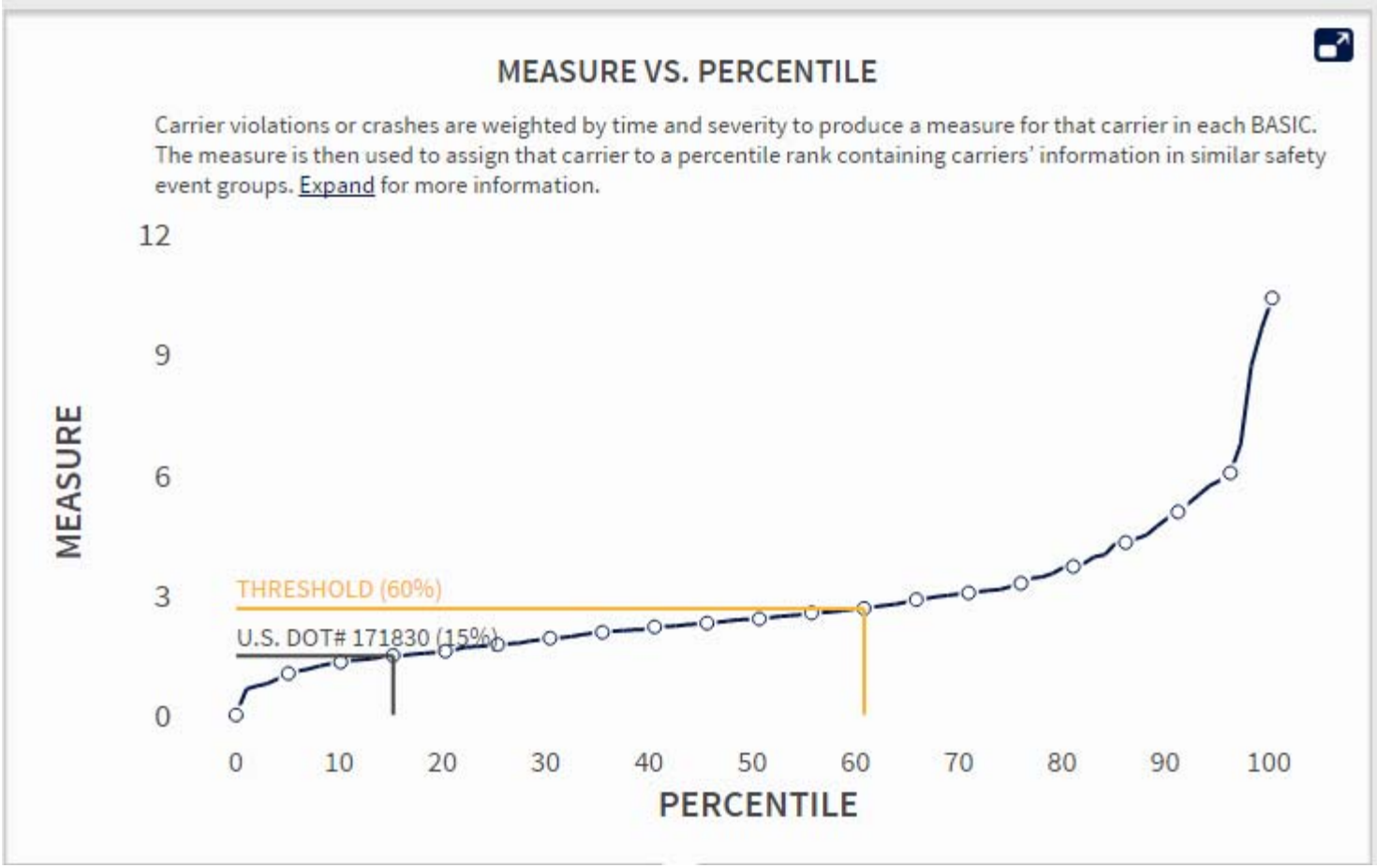
On-Road Performance						
1.41 Measure 15% Percentile	NOT PUBLIC	0.06 Measure 15% Percentile	1.61 Measure 22% Percentile	0 Measure 0% Percentile	NOT PUBLIC	0 Measure 3% Percentile
Investigation Results						
No Serious Violations Discovered	N/A	No Serious Violations Discovered	No Serious Violations Discovered	No Serious Violations Discovered	NOT PUBLIC	No Serious Violations Discovered

SMS Scoring

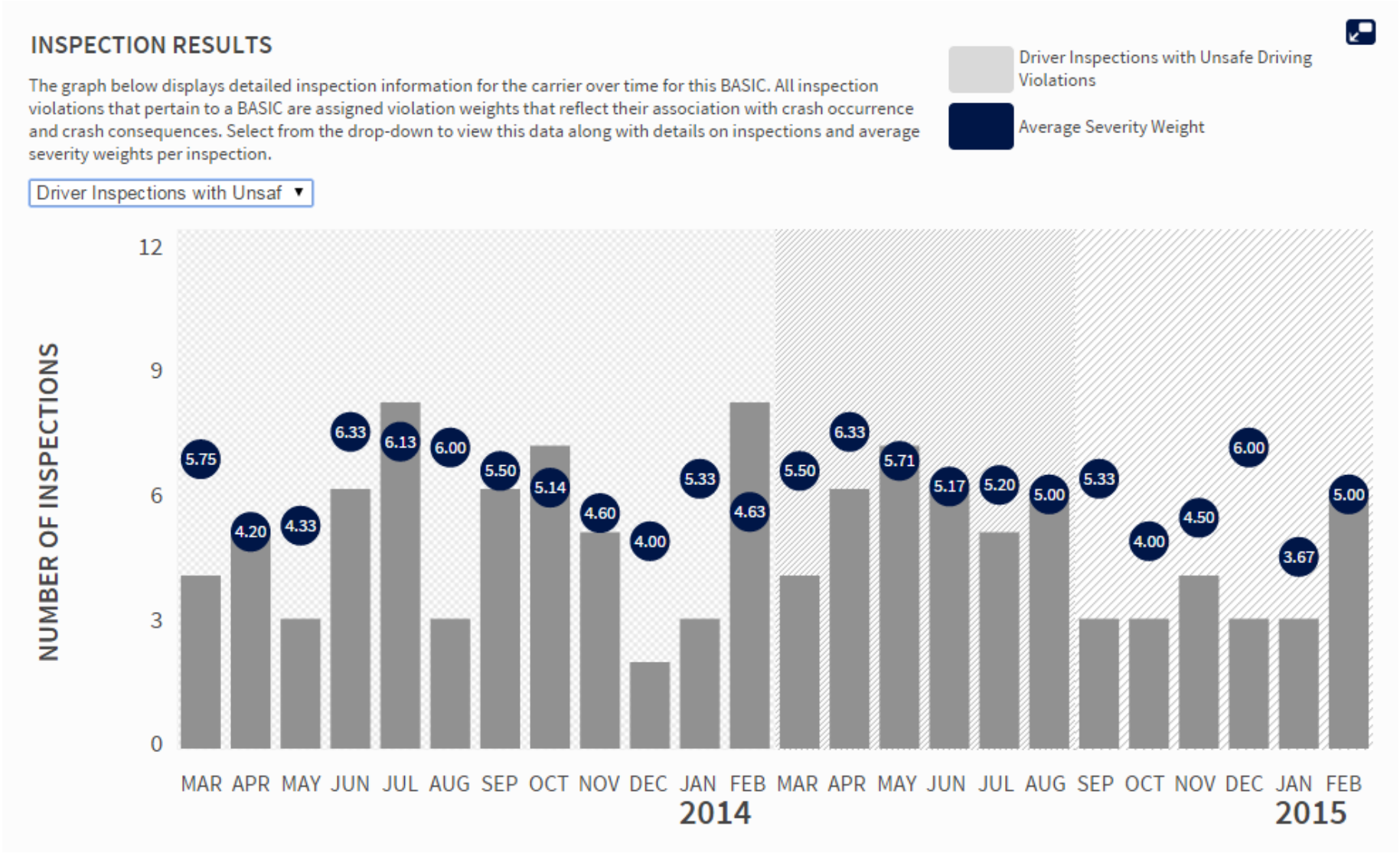

BASIC: Unsafe Driving
More Info
ON-ROAD + INVESTIGATION
On-Road Performance
Measure: 1.41 ?
Percentile: 15%
15%
0
60%
Intervention Threshold
100
Scale 0 to 100; 0 indicates the best safety performance.
15% of motor carriers in the same safety event group have better on-road performance than this motor carrier.
WHO IS IN THE SAFETY EVENT GROUP?
Investigation Results
No Serious Violations Discovered
CARRIER MEASURE OVER TIME
This graph displays a carrier's measure based on 24 months of on-road performance. Zero indicates the best performance. To see how the measure is calculated click here. To see how the measure relates to percentile click here. Expand for more information.
MEASURE
2
1.5
1
0.5
0
-0.5
1.49
1.44
1.43
1.39
1.39
1.41
SEP 26
2014
OCT 24
NOV 21
DEC 19
JAN 23
2015
FEB 20

SMS Driving Information

- Focus on unsafe driving incidents including Accidents



SMS Unsafe Driving Detail



SMS Unsafe Driving Detail

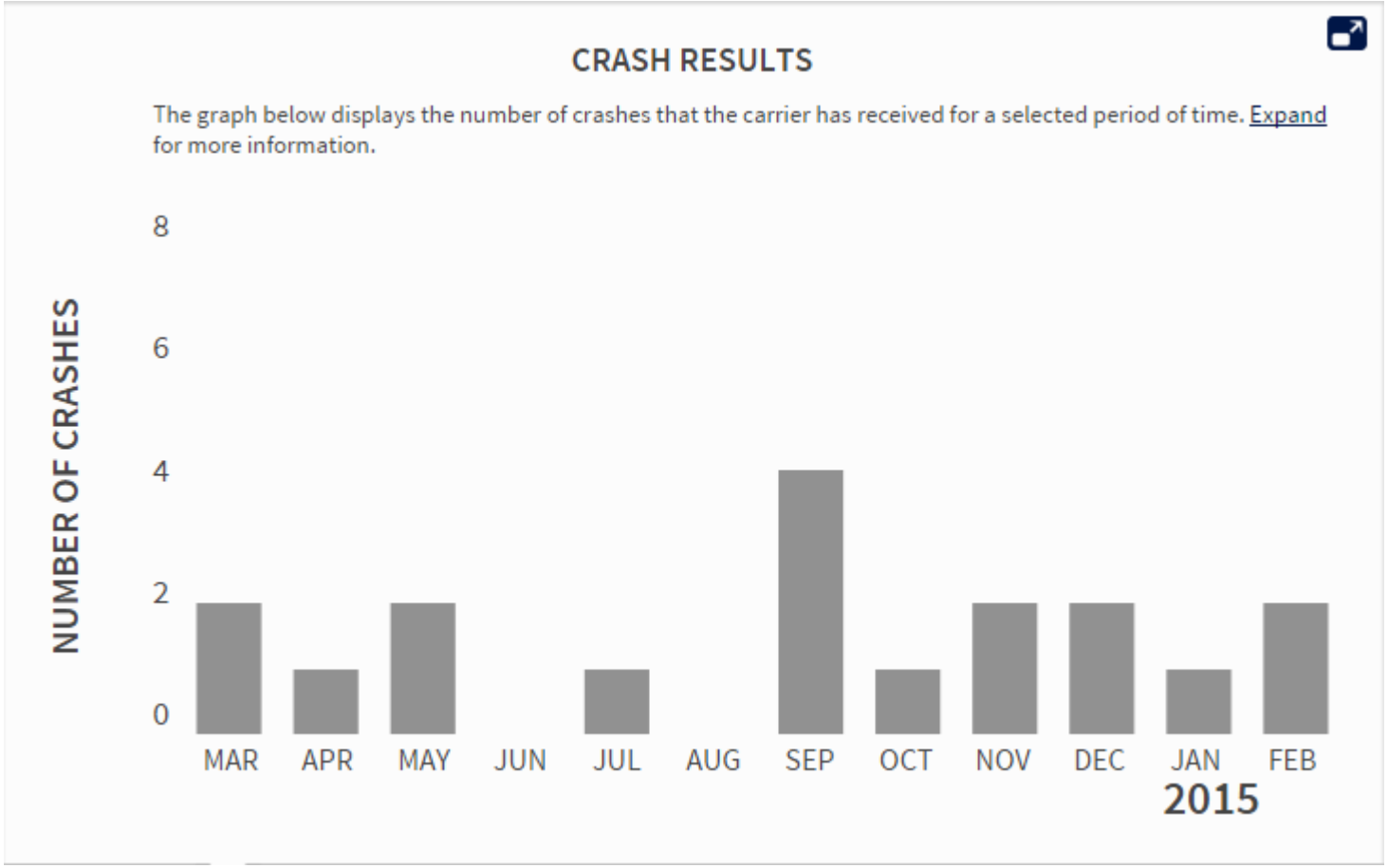
UNSAFE DRIVING VIOLATIONS

Violation	Description	# Total Violations	# OOS Violations	Violation Weight
392.16	Failing to use seat belt while operating CMV	25	0	7
392.2C	Failure to obey traffic control device	10	0	5
392.2FC	Following too close	9	0	5
392.2LC	Improper lane change	6	0	5
392.2LV	Lane Restriction violation	3	0	3
392.2P	Improper passing	1	0	5
392.2R	Reckless driving	1	0	10
392.2S	Speeding	39	0	5
392.2-SLLS1	State/Local Laws - Speeding 1-5 miles per hour over the speed limit	18	0	1
392.2-SLLS2	State/Local Laws - Speeding 6-10 miles per hour over the speed limit	17	0	4
392.2-SLLS3	State/Local Laws - Speeding 11-14 miles per hour over the speed limit	1	0	7
392.2-SLLSWZ	State/Local Laws - Speeding work/construction zone	1	0	10
392.2Y	Failure to yield right of way	2	0	5
392.71(a)	Using or equipping a CMV with radar detector	1	0	5
397.13	Smoking within 25 feet of HM vehicle	1	0	1

INSPECTION HISTORY

	Report			Vehicle			Measure		
	Inspection Date	#	ST	Plate #	Lic ST	Type	Severity Weight (A)	Time Weight (B)	Time Severity Weight (AxB)
1	2/27/2012	WI2224001581	WI	54914W	WI	Truck Tractor	7	3	21
	Violation: 392.16 Failing to use seat belt while operating CMV **(Non-OOS)**						7		
2	2/25/2012	MO00SD016139	MO	20301W	WI	Truck Tractor	4	3	12
	Violation: 392.2-SLLS2 State/Local Laws - Speeding 6-10 miles per hour over the speed limit **(Non-OOS)**						4		

SMS Crash Detail



Usage-Based Insurance

Telematics

- The blending of computers and wireless telecommunications technologies, ostensibly with the goal of efficiently conveying information over vast networks to improve a host of business functions or government-related public services.

Usage-Based Insurance

- Application of telematics to more closely align driving behavior with premium rates for automobile insurance
- Affordability
- Recognize individual vehicle or fleet performance
- Promote safe driving practices

Types of telematics data

Usage

- Basic usage data
- Mileage

Behavior

- Measures vehicle behavior on road
- Time of day
- Acceleration deceleration
- Speed
- Location

Geospatial

- Measures conditions of and surrounding vehicle
- Operating state of vehicle
- Weather
- Road type
- Traffic

Telematics Data Collected

Time	Latitude	Longitude	Elevation	Speed (MPH)	Heading (Degrees from true North)	Event Code	Odometer	Gas
2011-02-16T02:26:23	42.68	-112.20	367.02	0	0	IGNITION_OFF_TIME	69553	14.9
2011-02-16T01:26:24	42.68	-112.20	353.10	1	189	IGNITION_OFF	69553	14.9
2011-02-16T01:25:55	42.68	-112.20	356.51	1	270	IGNITION_ON_TIME	69552	14.9
2011-02-16T01:24:54	42.68	-112.19	354.49	30	302	IGNITION_ON_TIME	69552	14.9
2011-02-16T01:23:53	42.68	-112.19	359.44	0	283	IGNITION_ON_TIME	69552	14.9
2011-02-16T01:22:52	42.68	-112.19	346.44	51	0	IGNITION_ON_TIME	69552	15.0

…1440 records for the 24 minute trip…

2011-02-16T01:07:15	42.66	-111.92	466.54	73	284	SPEEDING	69535	15.4
2011-02-16T01:06:20	42.65	-111.90	453.66	63	289	IGNITION_ON_TIME	69534	15.4
2011-02-16T01:05:19	42.65	-111.89	465.18	54	237	IGNITION_ON_TIME	69533	15.5
2011-02-16T01:04:18	42.66	-111.89	489.80	47	160	IGNITION_ON_TIME	69532	15.5
2011-02-16T01:03:18	42.67	-111.89	515.10	22	208	IGNITION_ON_TIME	69532	15.5
2011-02-16T01:03:18	42.67	-111.89	515.10	22	208	DIRECTION_CHANGE	69532	15.5
2011-02-16T01:02:15	42.67	-111.89	554.38	0	0	IGNITION_ON	69532	15.6
2011-02-16T00:40:12	42.67	-111.89	554.38	0	0	IGNITION_OFF_TIME	69532	15.6

…1440 X 10k bytes = 14.4MB for the 24 minute trip (1 vehicle)…

Common Data Elements

Core Info

- Driver Age/Gender
- Permissive Use
- Passengers
- Vehicle characteristics
  - Safety features
  - Maintenance

Elements

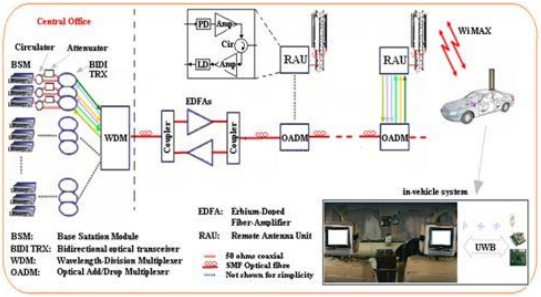
- Miles driven
- Time of day
- Trip Duration
- Speed
- # Stops
- Acceleration
- Braking
- Location*

Habits of interest

- Excessive speeding
- Hard braking
- Nighttime driving
- Cornering
- Type of road driven
- Regular route
- Fuel efficiency
- Weather/Traffic/Road Conditions
- Speed Limit

Other considerations

- Device
  - Choice of device and supplier
  - Management of the customer experience with device
    - Mailing of device
    - Installation assistance
    - Troubleshooting
- Customer interactions
  - Communications
  - Portals (online and mobile)
- IT infrastructure
  - Data transmission, capture and analysis



Mobile app solutions

Since 2011, there has been a proliferation of vendors offering the mobile app option as an alternative to the OBD solutions

- The overarching issues with the mobile app solution
  - Amount of time the app is off
    - Phone off
    - Phone not present in vehicle
  - The inability to guarantee data captured relate to the driver and vehicle
    - Passenger in car pooling situations
    - Public transit

Mobile app solutions – considerations

- Price of the solution
  - Upfront cost, in time and money
  - Per driver/vehicle/policy cost

- Completeness of the solution
  - Comparison against the OBD alternative
  - Accuracy against actual results
  - Correlation to claims potential

Building Risk Scores

- Data Volume

Over a thirty day period, a single vehicle may produce

- An average of 80 trips
- Over 50,000 distinct records

When comparing behavior between vehicles, there is variability

- Number of trips taken
- Time on the road
- Miles driven
- …

- Types of Scoring

Cumulative

- 31.6 hours
- 924.5 miles driven
- 172 trips

Summary Statistics

- 29.3 miles per hour
- 11.0 minutes per trip
- 5.4 miles per trip

Flags/ Percentages

- 20.88% time over 45 mph
- No incidents over 80 mph

Clustering & Sequencing

UBI – a strategy for success

Internal

- Understanding various options and approaches for launching a UBI program

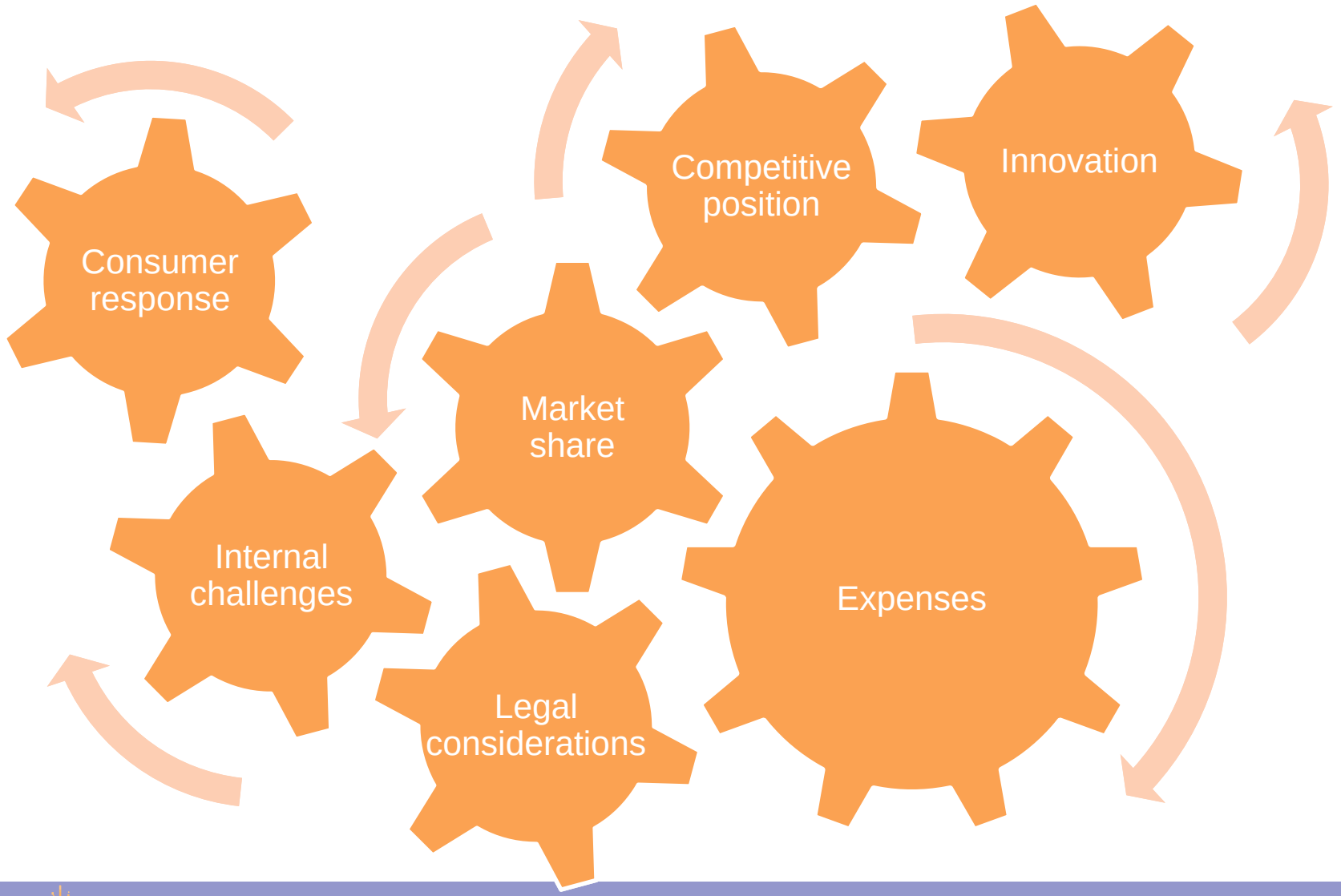
External

- Understanding UBI landscape
- Research customer demand and industry trends and evaluate potential investment given the company distribution model and value proposition

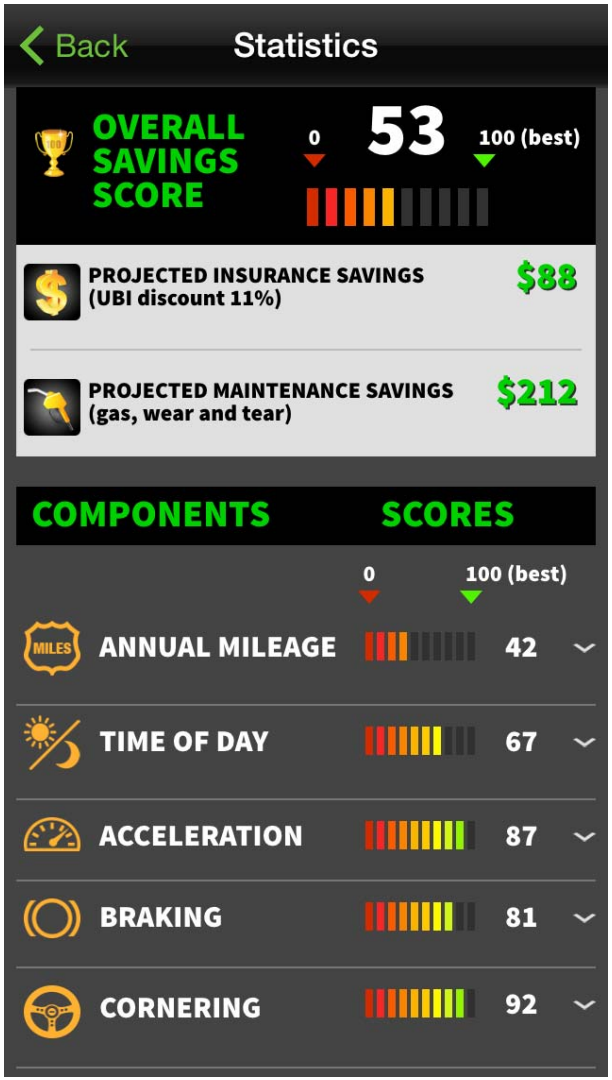
Strategy

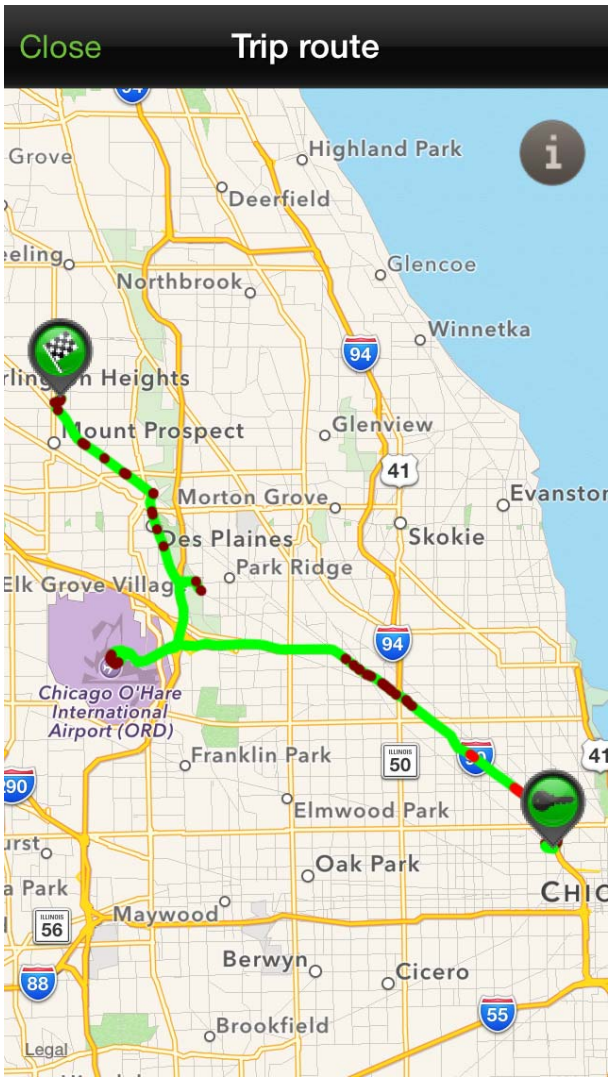
- Articulate a UBI strategy consistent with company strategy and goals
- Develop the data and analytics plan required for a successful program
- Identify market triggers that would signal key timing for market entry

Market entry considerations



UBI Information Interface



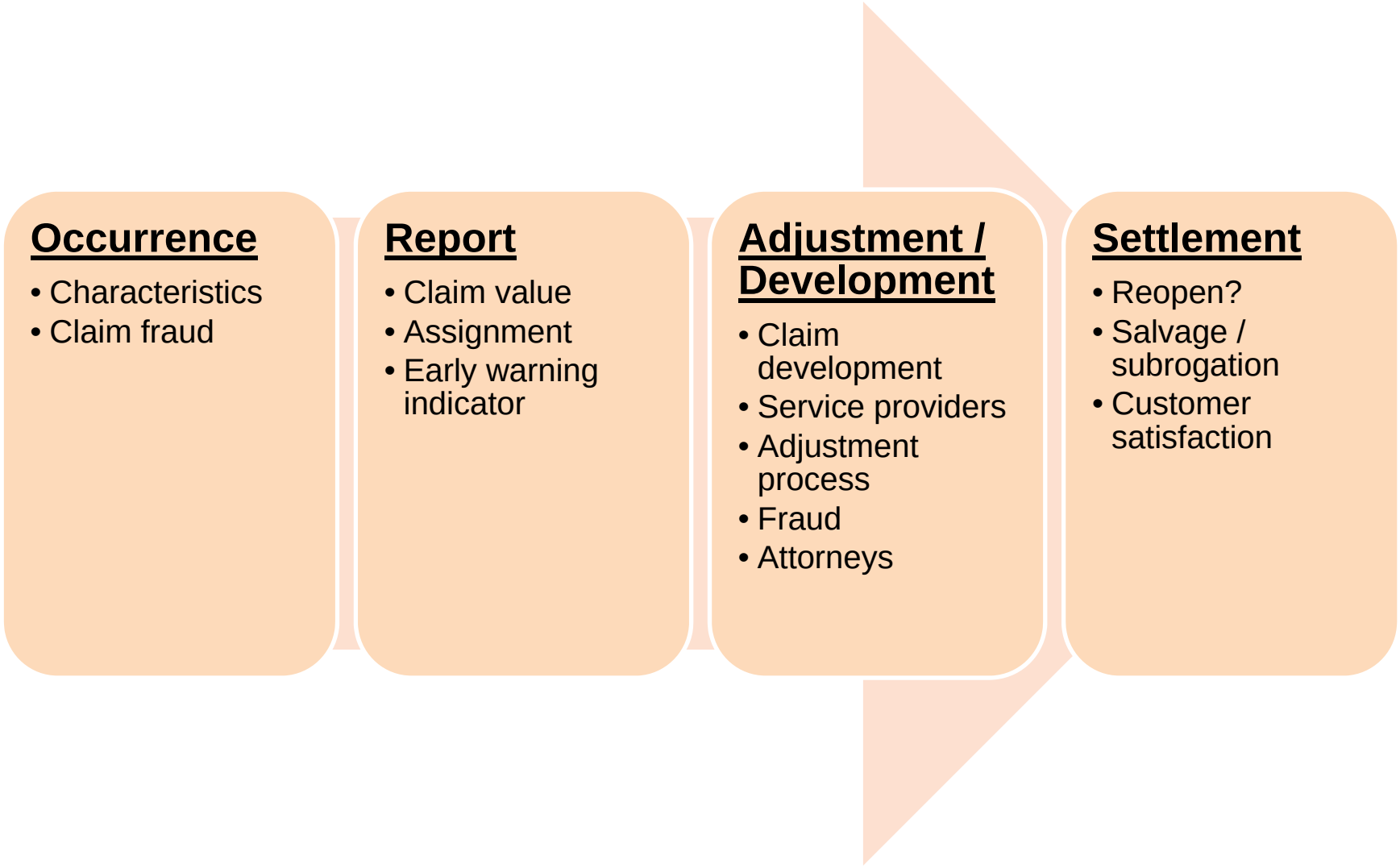


Emerging Data Trends

Commitment Beyond Numbers

PINNACLE
ACTUARIAL RESOURCES, INC.

Claims Predictive Analytics Opportunities



Applications of Analytics for Claims

- Claim settlement value estimation
- Early warning system
- Estimating the impact of process lags
- Developing a fraud detection system
- Analyzing text data to uncover claim insights

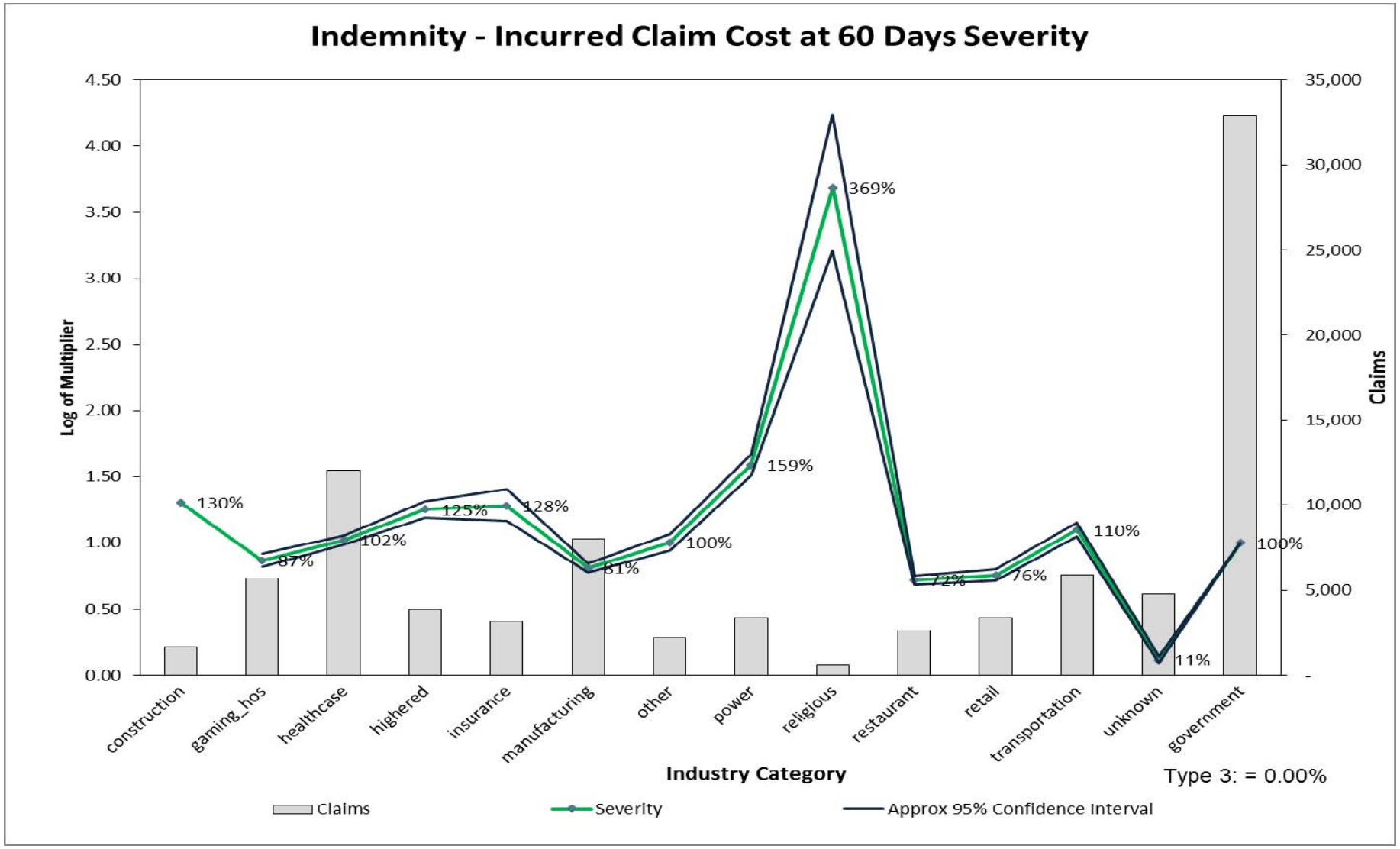
Data for Claims Analytics

- Geography (state, region, legal jurisdiction)
- Time (inflation, settlement lags)
- Claimant characteristics (age, date of hire, full time/part time)
- Insured characteristics (industry, class code)
- Attorney involvement
- Preferred claim network
- Other claims features (arbitration/ADR, settlement lag)
- Claim adjuster notes
- Medical bill review data
- External data

Estimating Claim Settlement Values

Business Problem	• Accurate estimate of ultimate claim liability • Increasing accuracy of estimate as information develops
Information Used	• Claim information • External data • FNOL and claim adjuster notes
Applications	• Establishing reserves • Claim assignment • Early warning

Claim Settlement Value by Industry



Emerging Data Trends

- Claims Analytics and text mining
- Commercial CLUE
- Tenant information
- Observations from Personal Lines
  - Building inspection protocols
  - Roofing
  - Weather data
  - Property telematics
- Internet
  - Web crawling
  - Linked in & social media

In Conclusion….

- Commercial Lines rating and underwriting continues to evolve
- Companies are being challenged to find new insights and methods of segmentation
- Data sources are readily available
- And new data sources continue to emerge

Thank You for Your Attention

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