



CYBER RISK AND INSURANCE: HOW ARE THE MARKET AND RATING METHODS EVOLVING?


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2019 CAS RATEMAKING, PRODUCT AND MODELING (RPM) SEMINAR




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LIVE POLL: WHICH CYBER THREAT IS MOST CONCERNING TO YOU?

- A. Attack on critical infrastructure
- B. Take down of major cloud provider
- C. Zero day in operating system
- D. Global Malware Attack
- E. Election Hacking
- F. Disruption of financial system (e.g. SWIFT)

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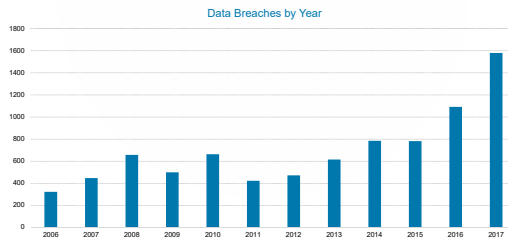
RECENT NOTABLE CYBER EVENTS

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INSURED MUST PROTECT AGAINST A DIVERSE RANGE OF ATTACKS

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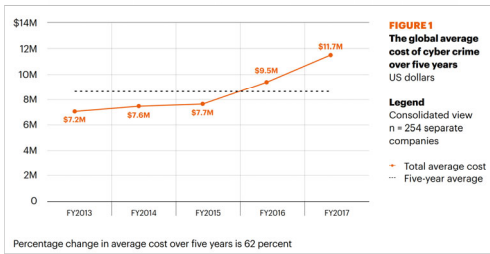
CYBER ATTACKS ON THE RISE



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CYBER CRIME COSTS INCREASE



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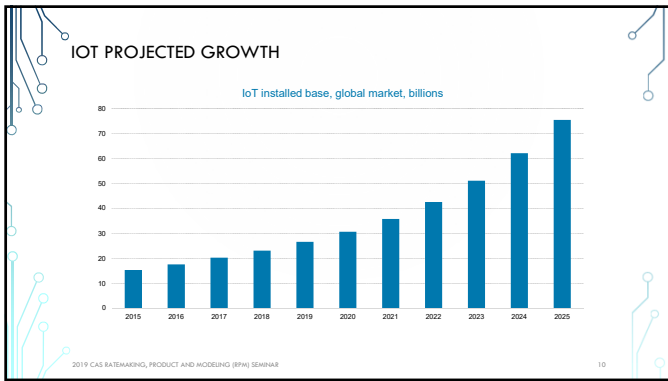
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THE EXPLOSION OF IOT IS CREATING A NEED FOR A MARKET



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LIVE POLL: THE CYBER INSURANCE MARKET TODAY IS APPROXIMATELY \$4B. HOW BIG DO YOU THINK IT WILL BE IN 2025?

- A. <\$10B
- B. \$10B – \$15B
- C. \$15B – \$20B
- D. \$20B – \$25B
- E. >\$25B

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CYBER IS ONE OF THE MOST ATTRACTIVE OPPORTUNITIES TO EMERGE IN THE GLOBAL INSURANCE INDUSTRY IN DECADES

“ This is the hottest insurance product that has come out in my 40-year career ”

- President, Betterley Risk Consultants

Cyber crime costs >\$400B per year but <1% is covered by insurance today

“ It is very rare in an insurance person’s career that a new product not only takes off but provides real benefit and value to the insureds, that’s seen as a must-have product. ”

- Paul Bantick, Beazley

15-40% premium revenue growth per year, expected to grow to \$10-20B+

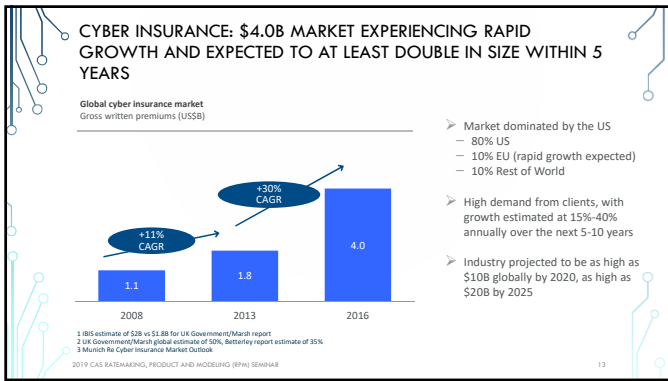
“ Cybersecurity insurance has a very, very bright future for insurers ... it fills a gap, a void, that virtually every business in America has ”

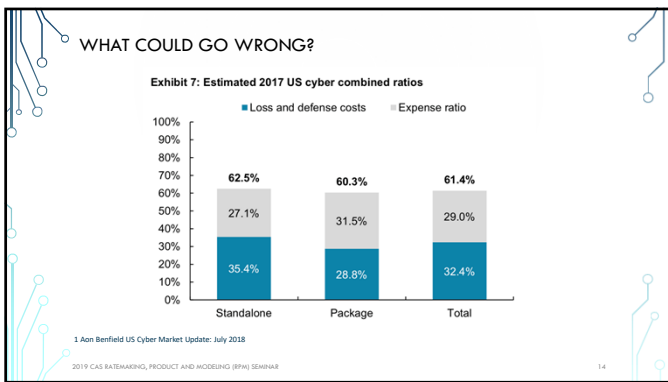
- CEO, Insurance Information Institute

>800 \$1B+ revenue companies buying cyber insurance in next 3 years

Limited focus on consumer and micro-business to-date

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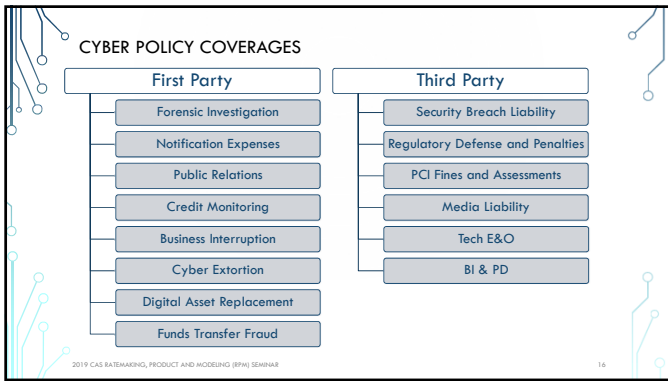


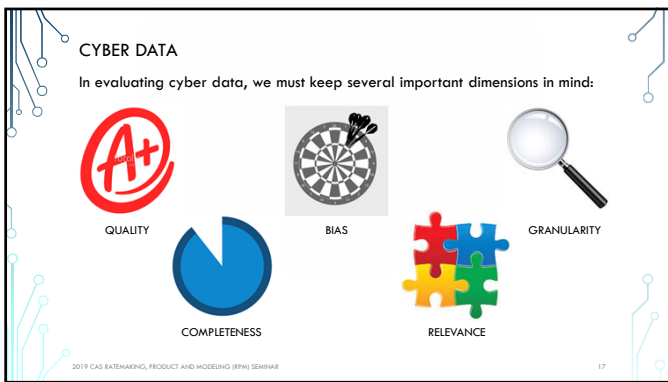


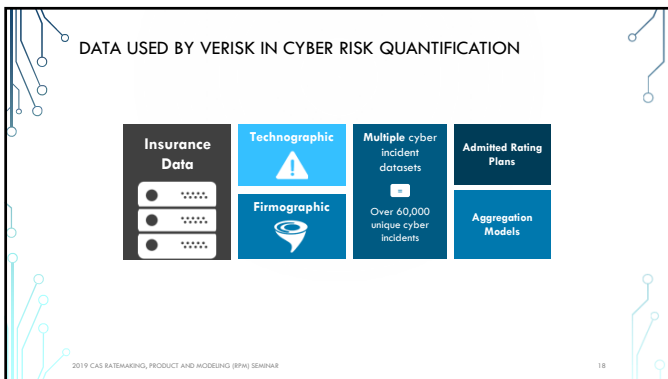
REGULATORY UPDATE

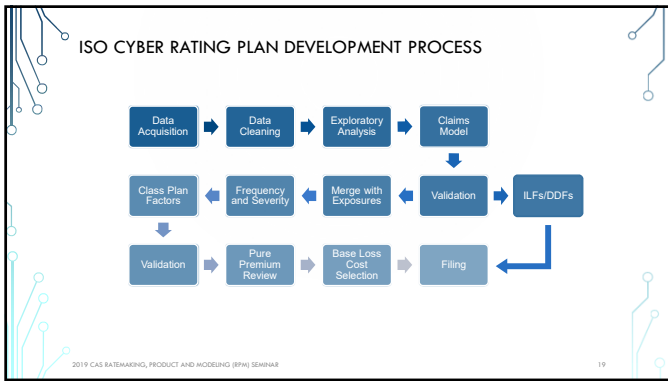
- GDPR
 - Google fine
- International Law
 - Australia
 - Singapore
 - China
 - EU
 - South Korea
- State law update
- California IoT law
- Regulation drives loss cost

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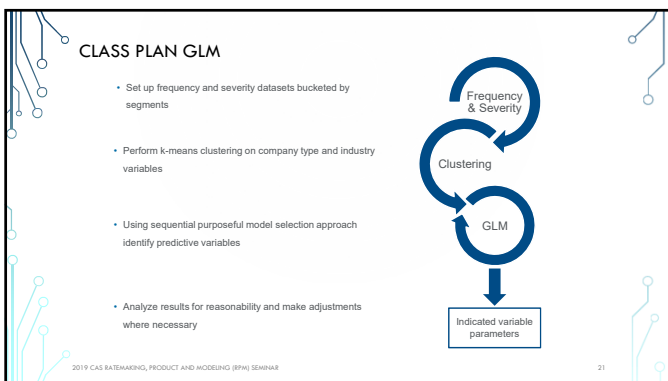


ISO CLAIMS MODEL - ILLUSTRATION

Incident #	Company Type	Revenue	Industry	# Records Exposed	Type of Record	Loss Amount	GLM	Modeled Loss
1	Not-for-Profit	86,127,000	Healthcare	380,760	PII	2,127,123		
2	Investment Fund	61,989,000	Finance	8,584,841	PII	1,100,000		16,462,786
3	Private	97,098,000	Information	7,315,013	PII	1,100,000		9,242,851
4	Private	44,126,000	Accommodation	3,467,500	PII	2,509,934		6,996,370
5	Public	84,282,000	Retail	3,613,102	PII	1,100,000		7,250,000
6	Private	67,091,000	Healthcare	3,527,680	PII	1,100,000		6,270,146
7	Government	51,160,000	Government	6,412,107	PII	1,100,000		2,513,000
8	Government	59,014,000	Government	6,876,762	PII	1,100,000		2,270,990
9	Public	17,766,000	Retail	263,300	PII	1,100,000		
10	Private	56,914,000	Finance	4,583,841	PII	1,100,000		
11	Public	89,617,000	Healthcare	638,163	PII	1,100,000		

- Third party cyber incident datasets don't have loss amounts available for each incident
- A GLM model was used to produce loss estimates for incidents where loss is not available
- Earlier models used 2 variables: # records exposed and type of record
- We are currently developing models that use additional variables such as industry and size

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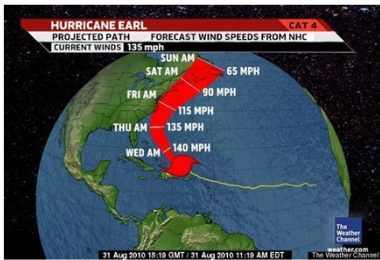


COMPANY ABC LOSS COST CALCULATION | ILLUSTRATION ONLY*

Input		Calculation		
Application Question	Information Provided	Field	Security Breach Expense	Extortion
Coverages Requested	Security Breach Expense, Extortion			
Revenue	\$8M	Base Loss Cost	\$5,000	\$3,000
NAICS code	5411	NAICS factor	.5	.5
Policy Aggregate limit	\$1M	ILF (net of ODF)	1.2	1.1
Coverage Limits	\$1M			
Deductibles	\$50k			
Years since retro date	10	Retro date multiplier	1.0	1.0
Years in Business	6	Years in biz factor	1.5	1.5
Company Type	Private	Company type factor	1.4	1.4
# of Employees	25	Average revenue per employee factor	.9	.9
Revenue per Employee	\$320k			
Other Underwriting Questions		UW questionnaire	.8	.8
Loss Cost = product of values above			\$4,536	\$2,486

*The factors in this slide are not real and should not be relied upon as such.

TRADITIONAL VIEW OF GEOGRAPHY AS A PREDICTIVE VARIABLE



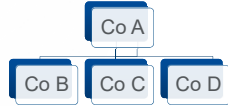
IN A CONNECTED WORLD, "GEOGRAPHY" NOW TAKES ON A NEW FORM...



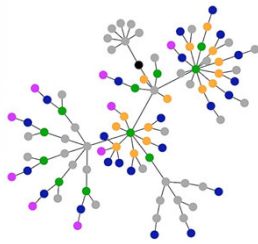
HOW WE SHOULD DEFINE A CATASTROPHE/AGGREGATION EVENT IS UNCLEAR



VS.



AN INSURER MUST PAY ATTENTION TO INSURED RELATIONSHIPS



WHICH COVERAGES ARE TRIGGERED? LACK OF STANDARDIZATION CLOUDS THE ISSUE



WHAT ABOUT SILENT COVERAGE?

Event	Property & Casualty								Life & Health		
	Affirmative Cyber	Property	Auto	Workers Compensation	Directors & Officers	Errors & Omissions	Business Owners	General Liability	Marine	Life	Accident & Health
Attack Scenario 1	x	x		x			x	x		x	x
Attack Scenario 2	x		x	x				x		x	x
Attack Scenario 3	x						x	x		x	x
Attack Scenario 4	x						x	x			
Attack Scenario 5	x						x	x			
Attack Scenario 6	x						x	x			
Attack Scenario 7	x						x	x			
Attack Scenario 8	x						x	x			

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- ### LIVE POLL: WHAT IS THE BIGGEST CHALLENGE THAT STILL FACES THE CYBER INSURANCE INDUSTRY?
- A. Data and Analytics
 - B. Unknown Unknowns
 - C. Customer take up rates
 - D. Standardizing policy language
 - E. Cultivating cyber risk management frameworks
 - F. Clarifying exclusions (e.g. war & terrorism)
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THANK YOU! QUESTIONS?

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