Impact of Big Data and AI on Insurance

NCSL Legislative Summit

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Big Data & Artificial Intelligence Trends
Nine key trends are interacting and impacting Big Data, Analytics, and Artificial Intelligence at a speed and scale not observed in the past

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<th>Trend</th>
<th>Big Data</th>
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<th>Democratization</th>
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<td>Big Data is getting ‘bigger’ and ‘faster’</td>
<td>Big Data technology is moving from Hadoop to streaming architectures to hybrid ‘translytical’ databases</td>
<td>Democratization of data, business intelligence, and data science is accelerating</td>
<td>Open source revolution in data, code, citizen data scientist is accelerating access to data and generation of insights</td>
<td>Artificial Intelligence is becoming ubiquitous intelligence with the ability to see, hear, speak, smell, feel, understand gestures, interface with your brain, and dream</td>
<td>Deep Learning, has been improving in speed, scale, accuracy, sophistication, and scope of problems addressed</td>
<td>Machine Learning, cloud computing, and open source movement are converging to create Machine Learning As A Service (MLaaS) decreasing overall cost of AI</td>
<td>Funding, especially machine learning and deep learning are continuing to attract significant investments</td>
<td>The Big Data Landscape continues to grow, while the AI landscape is expanding rapidly with Deep Learning companies growing the fastest across multiple sectors</td>
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PwC – Impact of Big Data and AI on Insurance
Insurance has moved up to the top of the list of ‘most disrupted sectors’
Disruptions in Personal Lines Insurance – Usage Based Insurance, Ridesharing, Peer to Peer, Direct-to-consumer, ADAS & Autonomous Cars
Disruptions in Life Insurance – **Robo-advice, Personalized insurance, Medical advances, Automated underwriting, decreasing morbidity and mortality risk**
InsurTech, investments have steadily grown over the past six years with over $17 billion invested

**InsurTech Funding and Number of Deals (2010-2016)**

Overall *insurtech VC funding grew at a CAGR of 31%* from 2011-2016

The InsurTech market has close to 1,000 start-ups focused in over 14 categories across personal, commercial, life and group benefits sectors.
In parallel, Artificial Intelligence funding has been increasing over the past decade with machine learning and deep learning attracting the maximum investments.

https://venturescannerinsights.wordpress.com/tag/artificial-intelligence/
Artificial Intelligence landscape is expanding rapidly with close to 1500 companies across 13 categories making it difficult for enterprises to track or monitor these companies.

Learn about our full report with 1485 companies across 13 categories with $8.9B in funding.

https://venturescannerinsights.wordpress.com/tag/artificial-intelligence/
Deep Learning and Intelligent Agents or Bot companies are the fastest growing areas within AI
Big Data is getting ‘bigger’ and ‘faster’

Smartphones & Internet of Things will drive both the volume and velocity of data

Ford GT
- 3000 different signals;
- Handled by six “communication area networks” Generates 300MB of data per second or
- 100GB of data per hour.

http://www.news.com.au/technology/innovation/motoring/fords-gt-supercar-has-more-computer-power-than-a-fighter-jet/news-story/6c2d23db7a22a1ae4d53d2075bdc0
https://smallbiztrends.com/2015/12/60-seconds-on-the-internet.html

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https://smallbiztrends.com/2015/12/60-seconds-on-the-internet.html
Artificial Intelligence is becoming ubiquitous intelligence with the ability to see, hear, speak, smell, feel, understand gestures, interface with your brain, and dream.
Impact on Insurance
Traditional ecosystem is being enhanced by connected devices offering real-time information that will transform underwriting, loss control, and risk management.
Telematics digitizes ‘ride behavior’ providing insurers with a new way to engage customers, while also supporting the claims process.

**20-35%**

Reduction in crashes from accident prevention technologies which in turn lower claims costs

**40%**

Reduced Loss Adjusted Expenses through 2018 using data from car sensors

**5-15%**

Savings yield from Automatic ERS, ACN, and hence FNOL initiation

**30-80%**

Savings realized from telematics data enabled technologies to reduce fraud and theft

Sources: 1. Cisco IBSG estimates, 2011; 2. PwC research and analysis, Celent forecast
As seen in the broader FinTech space, InsurTechs get traction and evolve their model to tap into existing profit pools

- **2011**: Metromile is founded to enter the Insurance market with a customer-centric Pay-Per-Mile value proposition.
- **2015**: Metromile partners with Uber to provide coverage when the driver is not covered by Uber commercial policy.
- **2016**: Metromile acquires Mosaic Insurance... with the potential to underwrite its own policies in 50 states. Also raises $191.5M that will support its expansion plans. Mark Cuban one of the main investors.
The Climate Corporation revolutionized yield management and crop insurance for growers using machine learning techniques to model yield by individual fields and crop.

Why Monsanto Just Spent $1 Billion To Buy A Climate Data Company

The Climate Corporation, which collects data about the weather, is now part of Monsanto. Not necessarily the move you might expect from the agribusiness giant.

"With the challenges of weather becoming more erratic and more volatile, we see an opportunity to start incorporating more information into farmers’ decisions."
Discovery has demonstrated a way to break the ‘vicious cycle’ and deliver personalized underwriting by using technology, information and analytics.

Underwriting based on Vitality Age – Discovery South Africa

Source: www.discovery.co.za
Risks of Big Data and Artificial Intelligence
Risks & Challenges of AI

“I am in the camp that is concerned about super intelligence. First the machines will do a lot of jobs for us and not be super intelligent. That should be positive if we manage it well. A few decades after that, though, the intelligence is strong enough to be a concern.” Bill Gates, 2015

“I’m increasingly inclined to think that there should be some regulatory oversight, maybe at the national and international level, just to make sure that we don’t do something very foolish.” - Elon Musk, 2014
Emerging research and theory aims to fill these gaps and build trust by ensuring understandability and societal benefit are priorities of emerging AI.

**Bias-Prone**

*Used in sentencing, AI programs trained to predict recidivism trained on facial features of criminals appear to be racist*

**Difficult to Explain**

*Tay, a Microsoft chatbot, released to interact with the public began tweeting racist and inflammatory remarks in under 24 hours*

**With No Sense of Morality**

*If an autonomous vehicle must choose between potentially injuring its passenger or a pedestrian, it is unclear how (or why) the algorithm choose*

**With Societal Disregard**

*Many advancements in AI increase automation, often resulting in job loss and replacement*
Key aspects of AI are raising concerns with respect to Trust & Transparency resulting in multiple efforts around Explainable AI and Beneficial AI.

**Explainable Artificial Intelligence (XAI)**

Building AI models with accountability, and the ability to describe or depict why a certain decision was made by the algorithm.

**Beneficial Artificial Intelligence (BAI)**

Developing AI to with a consideration to maximum societal benefit in applications for justice, economy, and social policy.

Image Source: Gunning, DARPA I/2O, 2017
What are the risks of AI?

Bias-Prone
- Biased dataset
- Biased developers

Difficult to Explain
- Black-box approach
- Accuracy vs Explanation trade-off

No Sense of Morality
- No ‘gut-check’
- No values

Societal Disregard
- Disregard to jobs
- Governance of decisions

“We cannot blithely assume that a superintelligence will necessarily share any of the final values stereotypically associated with wisdom and intellectual development in humans.”

NICK BOSTROM IN THE SUPER-INTELLIGENT WILL
What are the considerations for policy makers?

“where regulatory responses to the addition of AI threaten to increase the cost of compliance, or slow the development or adoption of beneficial innovations, policymakers should consider how those responses could be adjusted…”

PREPARING FOR THE FUTURE OF ARTIFICIAL INTELLIGENCE, OFFICE OF THE PRESIDENT OF USA, OCT 2016
Thank you!

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