## AI & Data Science in Insurance

### Awareness & Purchase
- Marketing Mix & Optimization
- Prospect, Lead Generation & Response Models
- Sales Performance & Capacity

### Customer Service & Experience
- Recommendation Engine
- Customer Satisfaction & Loyalty
- Customer Segmentation
- Customer Lifetime Value
- Customer Retention
- Virtual Assistants

### Product & Underwriting
- Pricing – telematics, credit-scoring, territory, demographics, prior claims experience
- UW & Inspection Predictive Models
- Image recognition – dwelling condition, life insurance (age, BMI)

### Claim
- Claims Insurance Risk – property & injury, legal risk, fraud
- Claims Operations – Subrogation, capacity optimization
- Claims Satisfaction
- Weather loss prediction
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<tr>
<th><strong>Virtual Assistants</strong></th>
<th><strong>Vehicle Technology</strong></th>
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<tbody>
<tr>
<td>On-line virtual assistants that provide customer and agent service through AI-based algorithms</td>
<td>Telematics &amp; vehicle tech. leveraged for pricing, claims, and safety-related and other customer services</td>
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<th><strong>Claims Risk Models</strong></th>
<th><strong>Image Analysis</strong></th>
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<td>Many models to measure claim costs &amp; manage operations – auto bodily injury severity, theft, litigation, fraud</td>
<td>Use of image analysis on buildings, land, vehicles, and people (e.g., face) for UW &amp; Claims purposes</td>
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<th><strong>Pricing &amp; Underwriting</strong></th>
<th><strong>Marketing &amp; Customer</strong></th>
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<td>Key differentiation opportunity in insurance – credit scoring, telematics, demographics, UBI, prior claims</td>
<td>Use of new sources of data, (e.g., voice, 3rd party, social media) for customer satisfaction &amp; segmentation</td>
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Overview of Insurance Regulation

- Insurance is a heavily-regulated industry, very similar to banking and public utilities
- Insurance is regulated primarily at the state level, varying substantially across states
  - State insurance departments (led by insurance commissioners) – regulate substantially all aspects of insurance by state – financial, products, market & operations, licensing, consumer affairs
  - National Association of Insurance Commissioners (NAIC) – provides some coordination across states, including development of recommendations for new laws

- Purpose of insurance regulation:
  - To protect consumers
  - To maintain insurer solvency
  - To prevent destructive competition
Insurance Regulation – Primary AI-related areas

Products, underwriting & pricing

- **Rates** – must be filed & approved for most states/lines – including data (meta), algorithms and actual prices; remains public record for all but limited areas (e.g., “trade secret”)
  - Rates must be: (1) adequate, (2) not excessive, (3) not unfairly discriminatory
  - Rules of “disparate treatment” vs “disparate impact”

- **Underwriting guidelines** – filing requirements vary greatly across states, with generally less oversight than pricing

Market conduct & consumer affairs

- General monitoring of insurer operational practices (sales, marketing, UW, claims) through various mechanisms, including regular and consumer-triggered audits/exams
- Consumer complaints – formal requirements for resolving; can lead to market conduct exam