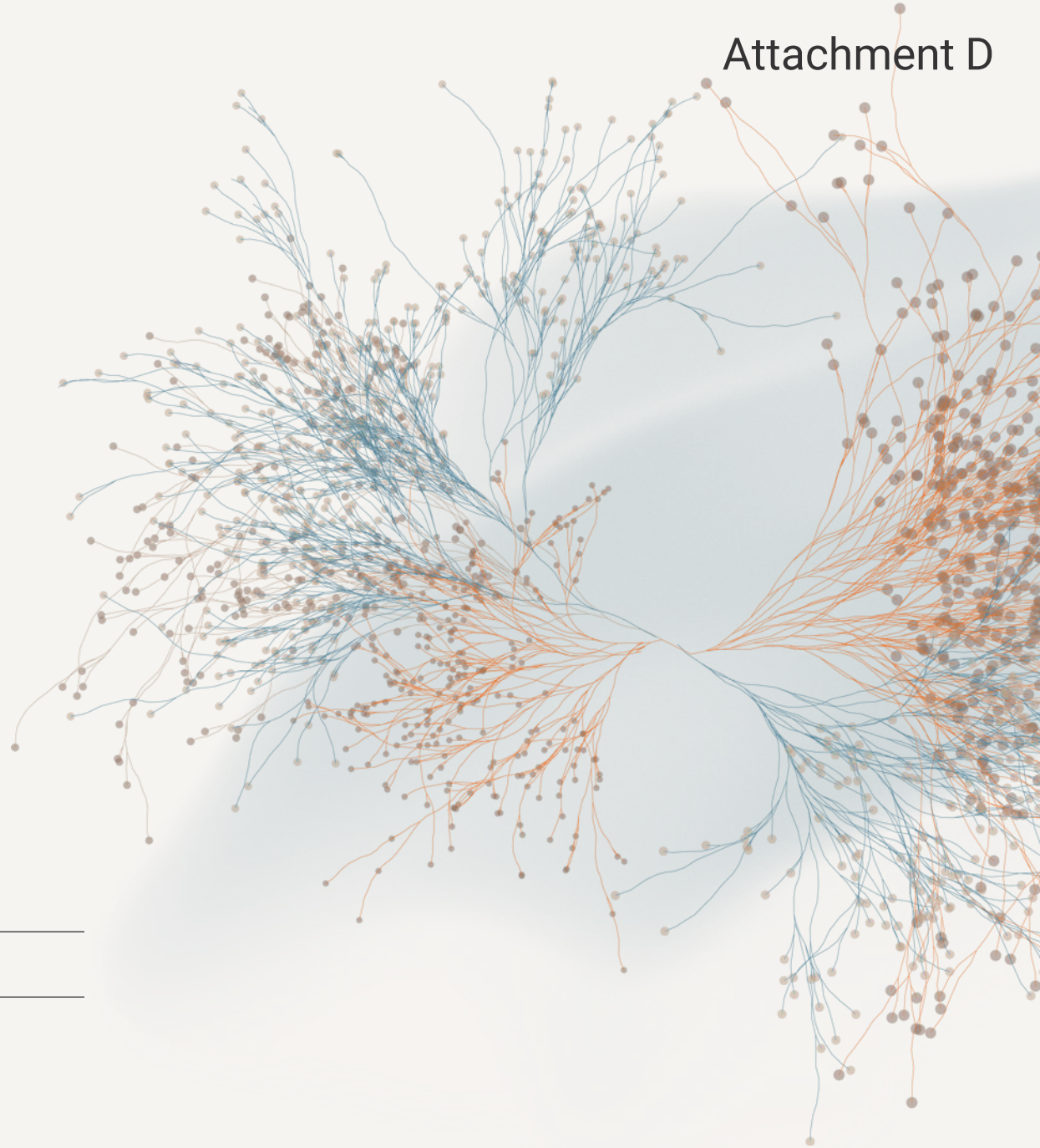
Attachment D

NORC Health

Artificial Intelligence in Health Insurance

The use and regulation of AI in utilization management



Presentation to the NAIC Big Data and Artificial Intelligence (H) Working Group

11.17.2024

Agenda

01 Report Overview

02 Key Findings

03 Recommendations

04 Conclusion

NORC Health

Our expertise in health-related issues, from aging to immunizations to insurance and health systems, informs programs and policies that affect the lives of millions.

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Report Overview

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The report was developed in partnership with the NAIC Consumer Representatives for Health

CONSUMER HEALTH ADVOCACY

AT THE NAIC

The research was divided into three phases:

1. **Environmental Scan** – Review and summarize white and grey literature to examine the current landscape of AI in health insurance decision making processes, with a focus on prior authorization as a form of utilization management (UM), and preliminary efforts to regulate it.
2. **Key Informant Interviews** – Supplement the environmental scan to create a more holistic view on the industry's current use and challenges of AI, including information that is not publicly known or published.
3. **Synthesis (White Paper Development)** – Combine the environmental scan and in-depth interview findings with policy recommendations.

Important Terminology

Artificial intelligence (AI) is a catch-all term referring to technologies that enable computers and machines the ability to mirror human learning and decision-making. Within AI, there are many different models and capabilities.

For this report, we are primarily focused on applications of **natural language processing (NLP) and machine learning (ML).** NLP is a form of AI that allows computers to understand, interpret, and generate human language. ML refers to the ability of computer systems to learn and adapt beyond its initial instructions.

Key Findings

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KEY FINDINGS

1 PLAN USE

AI is regularly used by health insurance plans to conduct utilization management.

2 IMPACT

Stakeholders see immense opportunities but warn that proper safeguards are missing today and need to be in place protect consumers.

3 OVERSIGHT & REGULATION

Some states have begun to regulate the development and use of AI in health insurance but have not been able to keep up with the proliferation of the use of AI itself.

The primary benefit of using AI for utilization management is the ability to reduce clerical burden, expedite approvals for patients, and enable practitioners to practice at the top of their license.

– Health Plan Executive

The chance to monitor and test AI systems is a chance to test and monitor outcomes to the standard that society expects.

– Technical Expert

The AI tools being used today are based on historically biased data.

It's one thing to look at a model and say, 'this algorithm is biased based on the data that we use to develop it,' but there is also a gap in the patients who are able to fight back against the denials.

– Consumer Advocate

Health plans leverage the abilities of AI to make UM decisions, specifically to respond to prior authorization requests

Health plan sees the potential for AI to:

- Reduce administrative burden
- Allow clinical reviewers to work at the top of their license
- Speed approvals

Research focused on three primary ways health plans are using AI in UM:

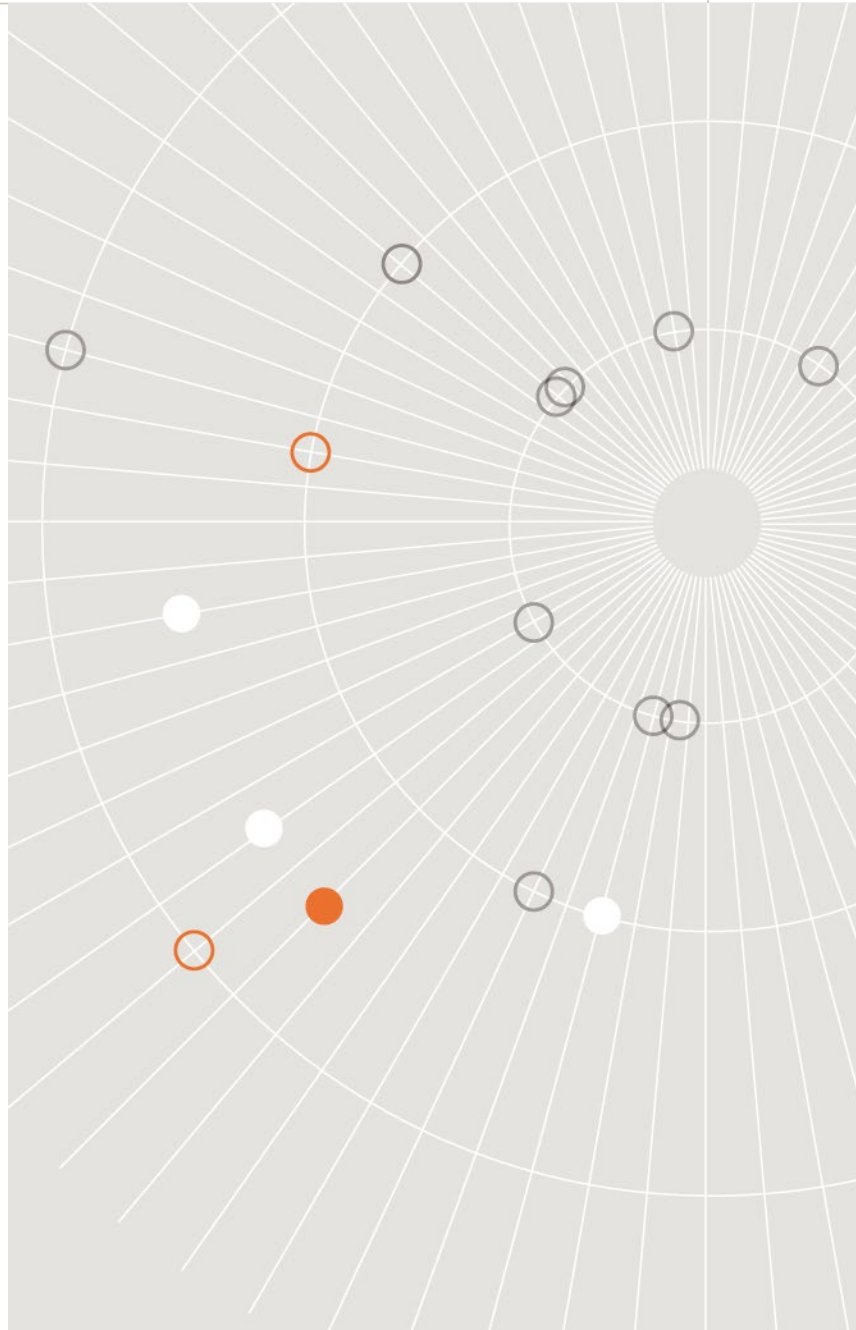
- Administrative-Only AI
- Decision-Making AI
- AI Learning Model

	Scans Large Datasets	Uses Fixed Inputs to Make Case Determinations	Evolves Algorithm Based on Data
Administrative-Only AI	✓		
Decision-Making AI	✓	✓	
AI Learning Model	✓	✓	✓

As AI tools are developed and deployed to make coverage decisions, concerns arise

In the absence of a comprehensive regulatory framework for the use of AI in health insurance, stakeholders have started to identify the potential risks that may adversely impact care delivery and health outcomes:

- **Tools trained by biased datasets**
- **Algorithms developed with misaligned incentives**
- **Machine learning systems developing their own processes**



As AI in UM expands, the state regulatory landscape has been uneven in its ability to keep up with advancements

- **States have started to develop their own approaches on how to best regulate this evolving environment**

- **Many organizations have developed frameworks on how AI should be used and regulated in health insurance practices**

NAIC	NHeLP	National Health Council	AMA	AHIP

NHeLP = National Health Law Program; AMA = American Medical Association, AHIP = America's Health Insurance Plans

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RECOMMENDATIONS

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Transparency, both to regulators and consumers, is seen as a crucial component of AI oversight as seen in both regulatory and legislative action to date, and as reflected in the guiding principles for AI put forward by health care advocates.

Transparency is critical to hold health insurance plans accountable, and when appropriate, liable for the harm caused by the integration of AI into UM activities. Accountability is necessary to hold parties liable for harm.

Regulators need to ensure that health insurance companies place humans with the appropriate clinical training, authority, at the center of decisions that impact patient care. Accessible appeals processes must be considered a right for all consumers.

Transparency, both to regulators and consumers, is seen as a crucial component of AI oversight

CONSUMER HEALTH ADVOCACY AT THE NAIC

- **Meaningful transparency is critical**; it must be clear, to both regulators and consumers, when AI is being used by health insurance plans for the purposes of UM and what role the AI plays in making determinations about coverage for care
- **Transparency must extend to disclosures about the data used to develop, train, and test the AI tools** (with an emphasis on consent for use and representativeness of the population), and the extent to which any AI tool can begin to train itself
- **Existing laws that are used to regulate data should be assessed for their applicability** to AI in utilization management

The reliance on proprietary technologies obscures accountability for decisions when harm is done

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- **Transparency is a necessary precursor** for any complaint or action taken to enforce regulation
- **Regulatory standards must clearly identify which parties are accountable** (e.g., health plans, technology developers, etc.) when AI tools are used in UM decisions that lead to consumer harm, including discrimination, breeches of privacy, and incorrect adverse determinations
- **Regular audits**, conducted on behalf of state regulatory agencies by parties with specialization in testing AI technologies, can be an effective way to both understand the ways AI is used in making UM decisions and hold the plans accountable for its use
- AI tools intended for UM decisions should be **built on standards of care that aim to achieve the highest level of quality**, and penalties for non-compliance need to be significant enough to have influence
- Governance structures that **measure and prevent harm to historically marginalized and minoritized populations** must be required

Human oversight is important, but is not a panacea and accessible appeals processes must be prioritized

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- **Robust and accessible appeals processes** for coverage denials need to be established and considered a guaranteed right for all health insurance consumers
- **Human oversight must be embedded into UM when AI is used** and those reviewers must have the authority and ability to overturn decisions made by the AI without undue consequences
- **AI regulation needs to be considered an evolving practice**, that relies on collaboration between regulators, technical experts, industry stakeholders, consumers, and consumer advocates

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CONCLUSIONS

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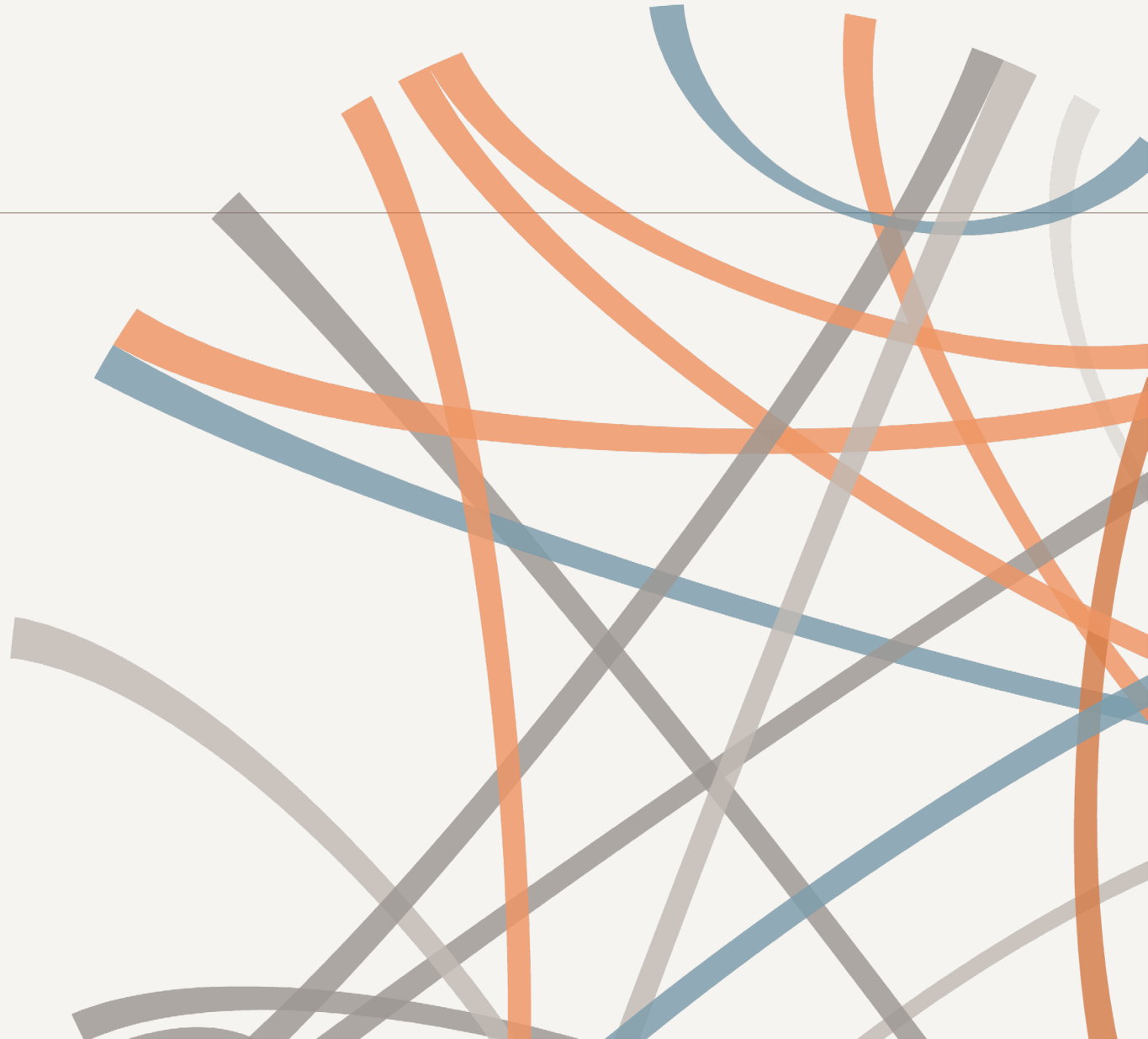
The time to act is now

The rapid expansion of AI tools in health care insurance demands immediate regulatory attention to protect consumers from potential harm and discrimination, when AI is used in UM decisions.

While this report outlines some key considerations, it is not exhaustive and instead attempts to offer a foundation for understanding current AI use cases in UM and highlights the urgent need for state and industry leaders to examine and regulate these practices.

The importance of acting now cannot be overstated. Without immediate safeguards, the risks posed by unchecked AI in health insurance processes will only continue to grow.

Questions?



Thank you.

Lauren Seno
Director
seno-lauren@norc.org

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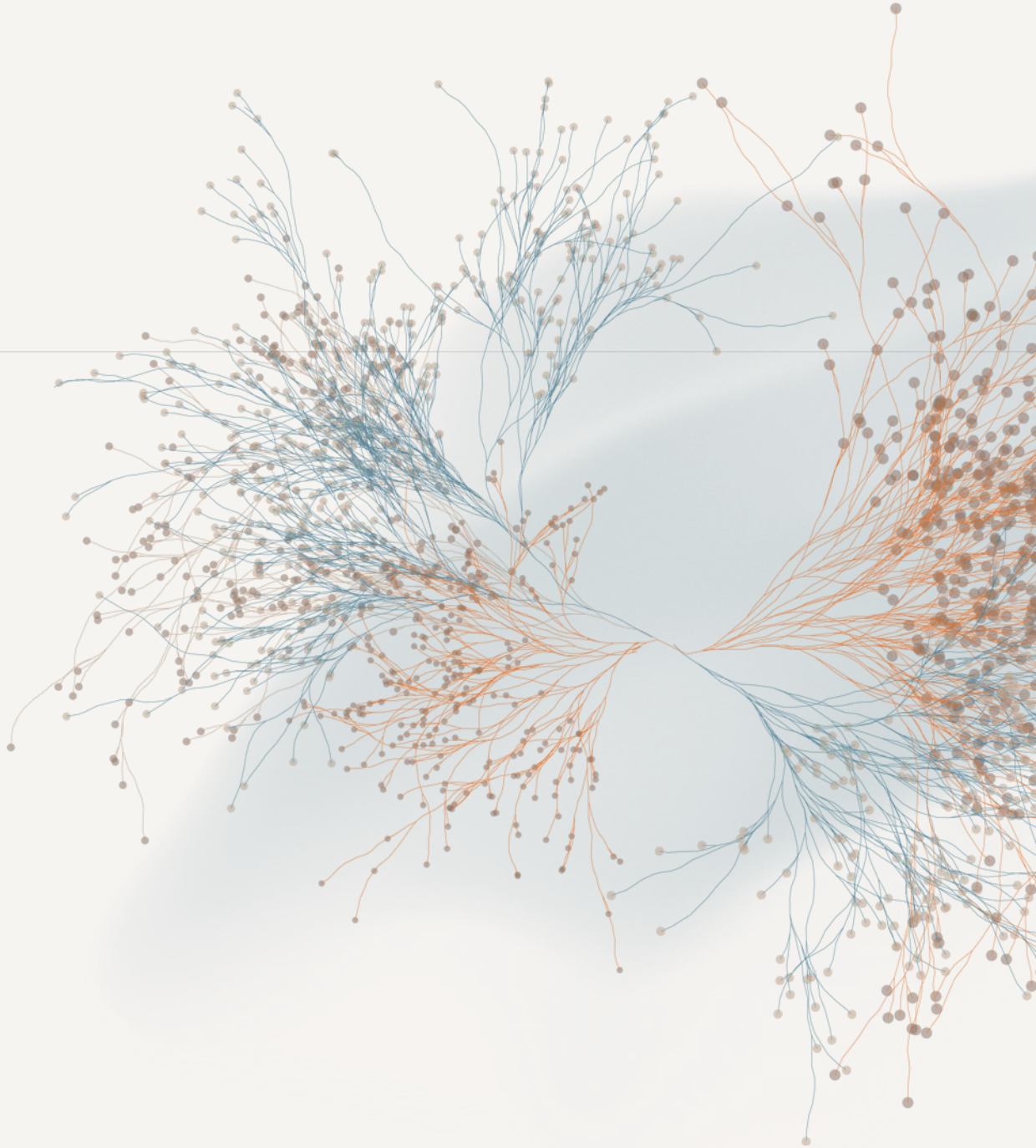
Appendix



Environmental scan search terms were grouped into three main categories

1. **Utilization Management**
   - Use of AI by health plans in UM
   - Most common applications of AI in UM
2. **Equity and Bias**
   - How is bias measured and monitored in AI generally? By plans or regulators specific to AI in UM?
   - Status of state regulatory actions – have states implemented self-assessments or currently monitor for bias?
3. **Technical Components**
   - Are the tools or applications leveraging AI in UM aligned with intended purpose?
   - How are the tools trained, tested, and monitored?

Search Parameters

- Limited to materials published in/related to the US only
- Date range: 2009 – 2014
  - Expected most literature to be from 2018 – present, but wanted to be inclusive
- 219 initial results (113 included after secondary review)

Complete primary and detailed search terms are available in the Appendix.

Primary Search Terms	Detailed Search Terms
Utilization Management	
Application*, **or use*** of AI in insurance utilization management practices	(“application” OR “use”) AND (“AI”) AND (“HEALTH INSURANCE”) (“utilization management” OR “prior authorization” OR “denials” OR “care management” OR “managed care” OR “claims analytics”)
Application*, **or use*** of AI in insurance utilization management practices by service line	(“application” OR “use”) AND (“AI”) AND (“HEALTH INSURANCE”) AND (“SERVICE LINE” OR “CONDITION” OR “DISEASE” OR “HEALTH CONCERN”) (“utilization management” OR “prior authorization” OR “denials” OR “care management” OR “managed care” OR “claims analytics”)
Equity / Bias	
Standards*, **or measures*, or assessments*,** to prevent biases in AI training in health care*, **or health insurance***	(“standards” OR “measures” OR “assessments) AND (“prevent” OR “mitigate”) AND (“biases in AI training” OR “biases in AI development”) AND (“health care” OR “health insurance”)
Current tests for detecting biases in AI in health care*, **or health insurance***	(“current” OR “existing” OR “validated”) AND (“tests for detecting biases in AI”) AND (“health care” OR “health insurance”)
Technical Components	
AI for utilization management in health care*, **or health insurance***, intended use*, **or purpose*, or application***	(“AI”) AND (“utilization management” OR “prior authorization” OR “denials” OR “care management” OR “managed care” OR “claims analytics”) AND (“health care” OR “health insurance”) AND (“intended use” OR “intended purpose” OR “intended application”)
AI for health care*, **or health insurance*,** training standards*, **or measures*, or practices*** at development*, **or ongoing**	(“AI”) AND (“health care” OR “health insurance”) AND (“training standards” OR “training measures” OR “training practices”) AND (“development” OR “ongoing”)

Each interview had a tailored interview guide, but each conversation aimed to cover five main questions

1.

How has the use of AI in UM evolved in the past five to ten years?

How are plans using AI today? How might that evolve in the future?

2.

What are the intended outcomes for the use of AI in UM?

When functioning as intended, what impact is AI having on cost and quality of care?

3.

What unintended outcomes have we seen that are the biggest concern?

What impact does AI in UM have on historically marginalized and minoritized communities?

4.

How do current policy or regulatory actions address these concerns?

What state and federal policies exist today that can be applied to AI in UM? Where are the gaps?

5.

What policy or regulatory actions are needed to prevent consumer harm?

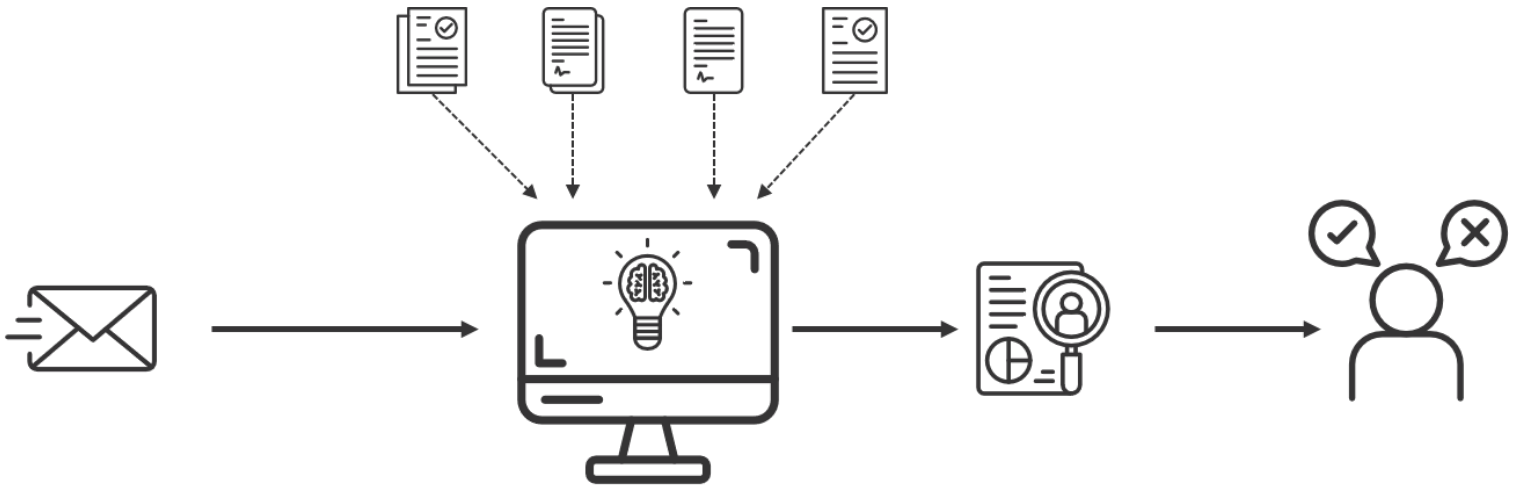
What should regulators consider when shaping potential action to prevent harm when AI is used in UM?

Key Informant Interview Participants

Perspective	High-Level Descriptor
Health Plan	Analytics Executive at a Regional Health Plan
Thought Leader	Health Policy Professor
Consumer Advocate	Attorney for Underserved Patients and Families
Consumer Advocate	Leader at a Patient Advocacy Organization*
Regulator	Representative from a State Department of Insurance
Technical Expert	Algorithmic Design and Measurement Consultant
Provider	Representatives from a Trade Group for Physicians

*The second consumer advocate provided written responses to the structured interview questions.

Example 1: Administrative-Only AI in UM

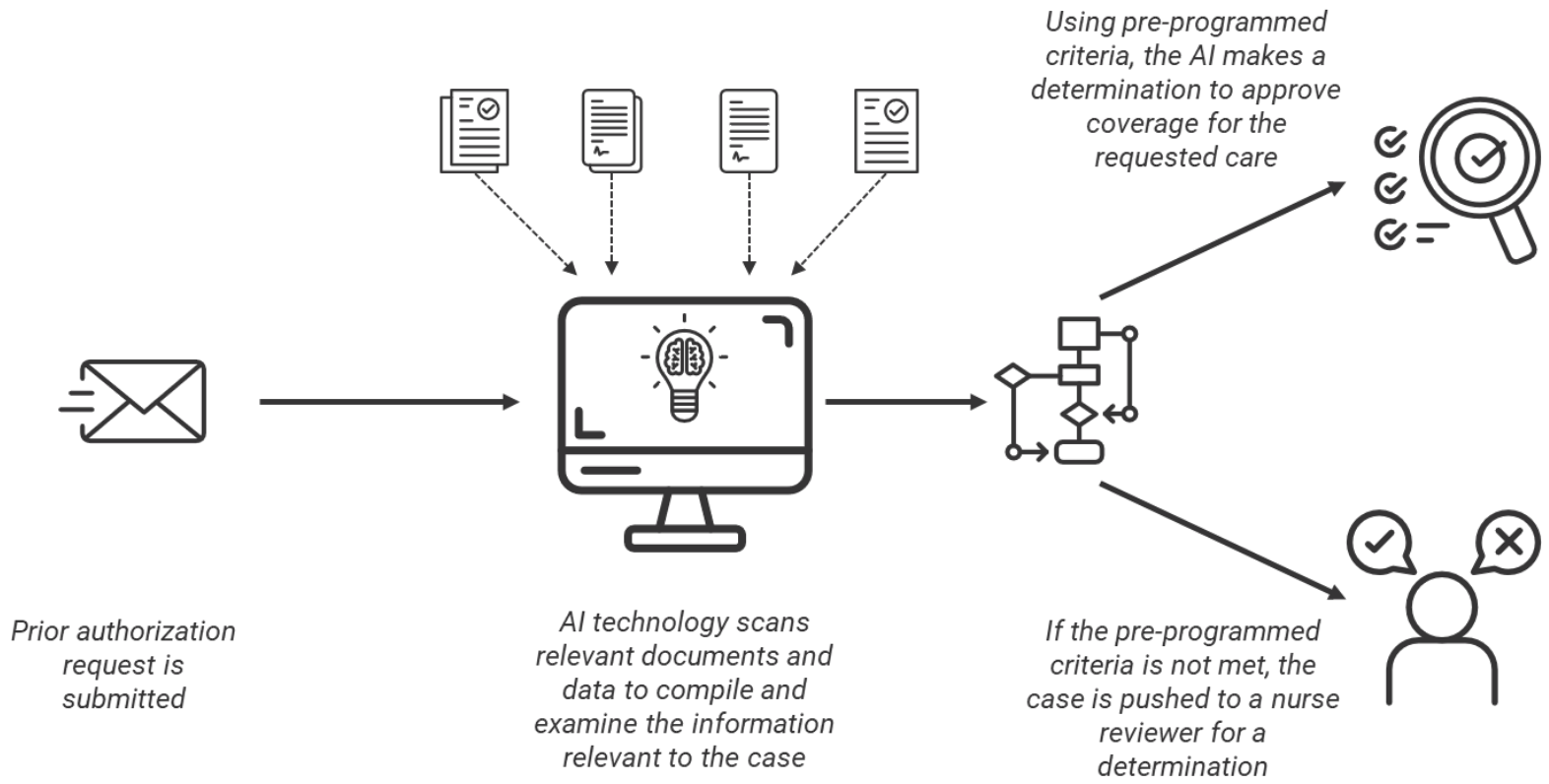


Prior authorization request is submitted

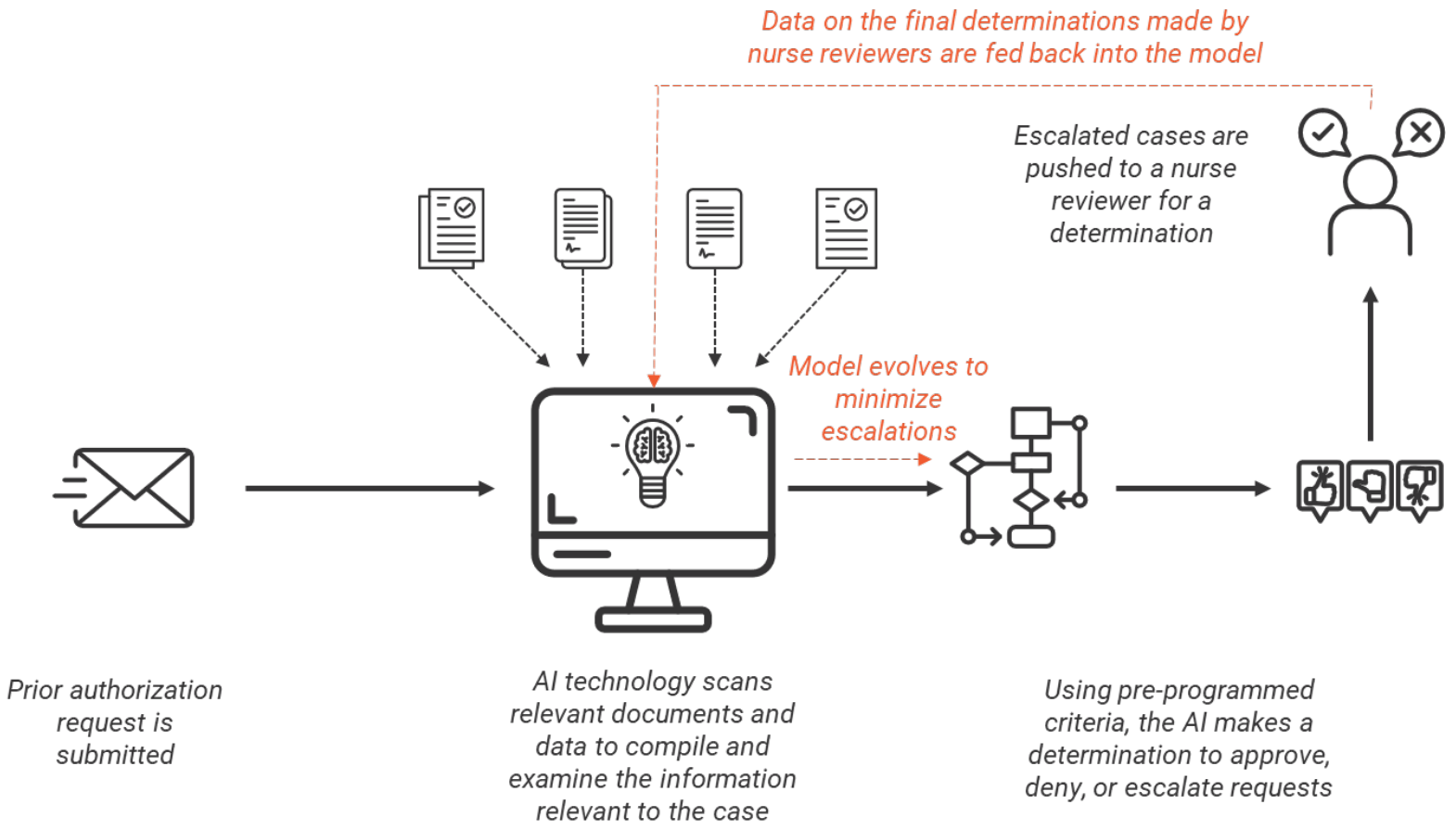
AI technology scans relevant documents and data to pull forward the information relevant to the case

The relevant information is submitted to the nurse reviewer for their determination

Example 2: Decision-Making AI in UM



Example 3: AI Learning Model for UM



Attachment E

How AI is Used in Underwriting and Claim Management

Zhiyu (Frank) Quan

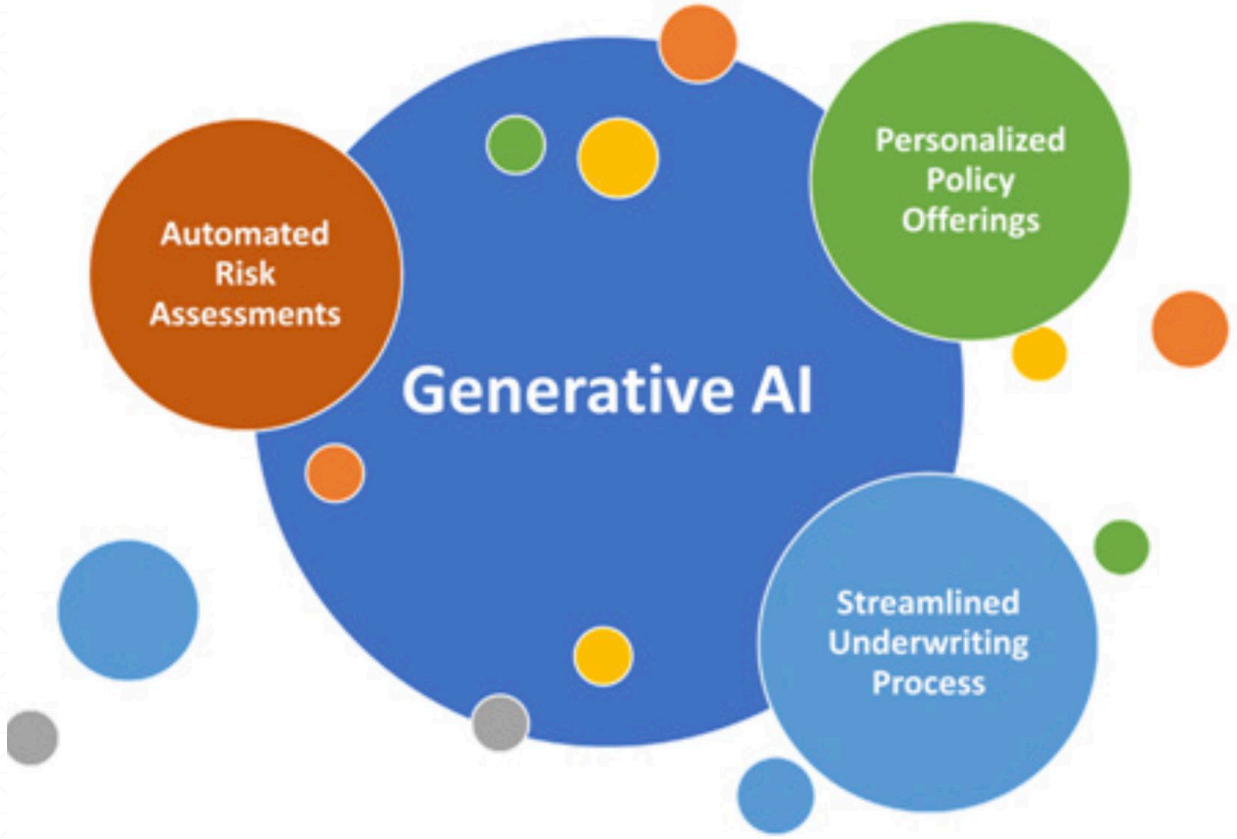
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

I gratefully acknowledge Scott Sobel, Panyi Dong & Xiaoyu Dong, who assisted in preparing this presentation.

Underwriting

Streamlined Underwriting:

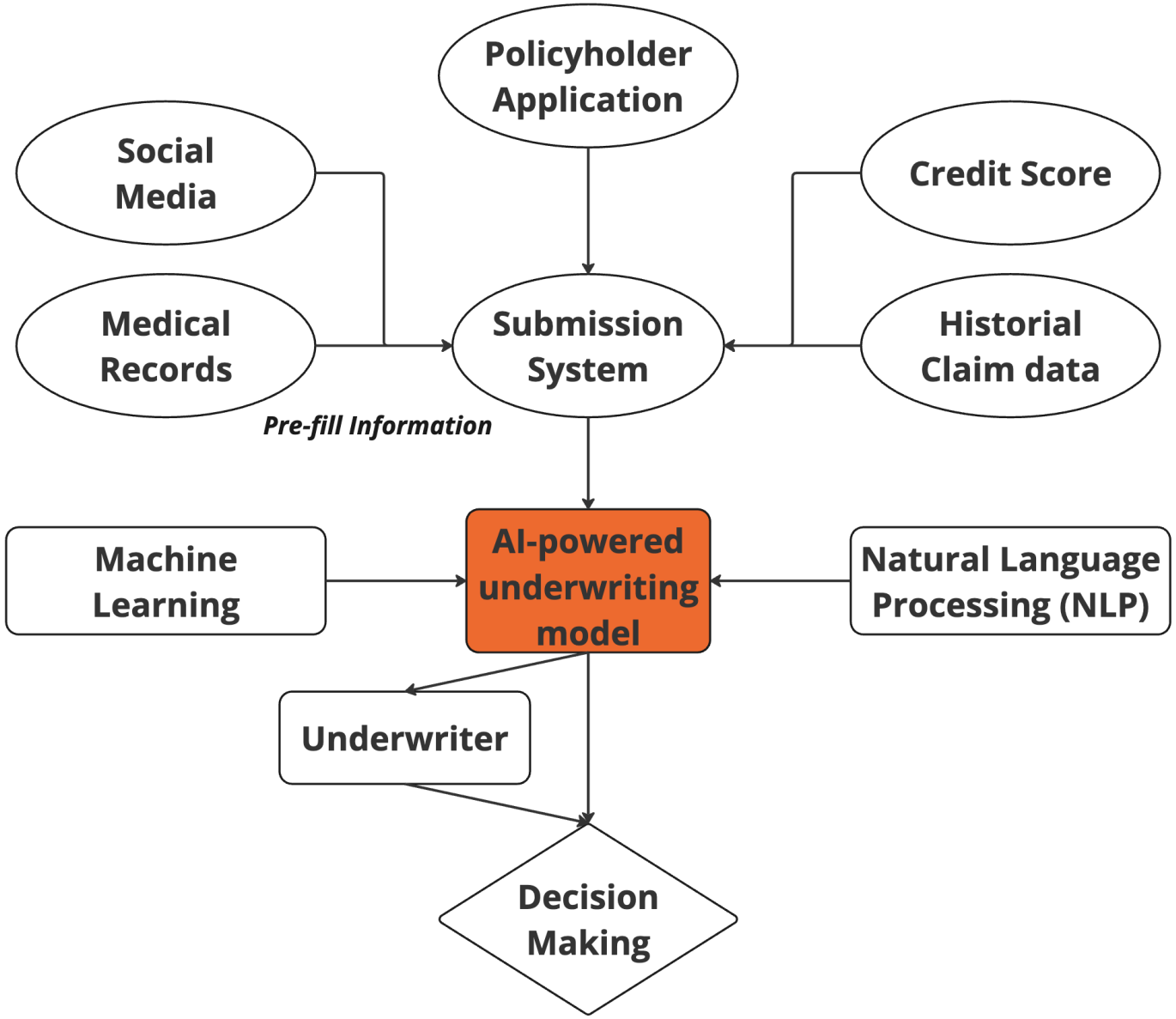
The use of advanced technologies and data analytics to streamline the traditional insurance underwriting process.



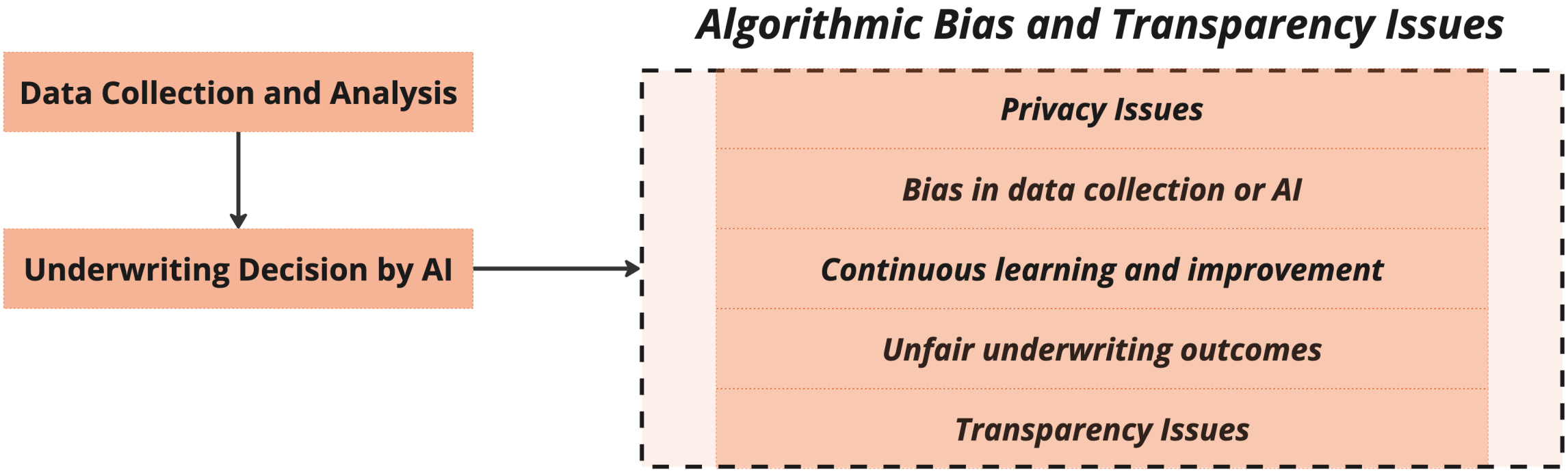
Underwriting

Improved Customer Experience:

- Fewer questions
- Faster turnaround



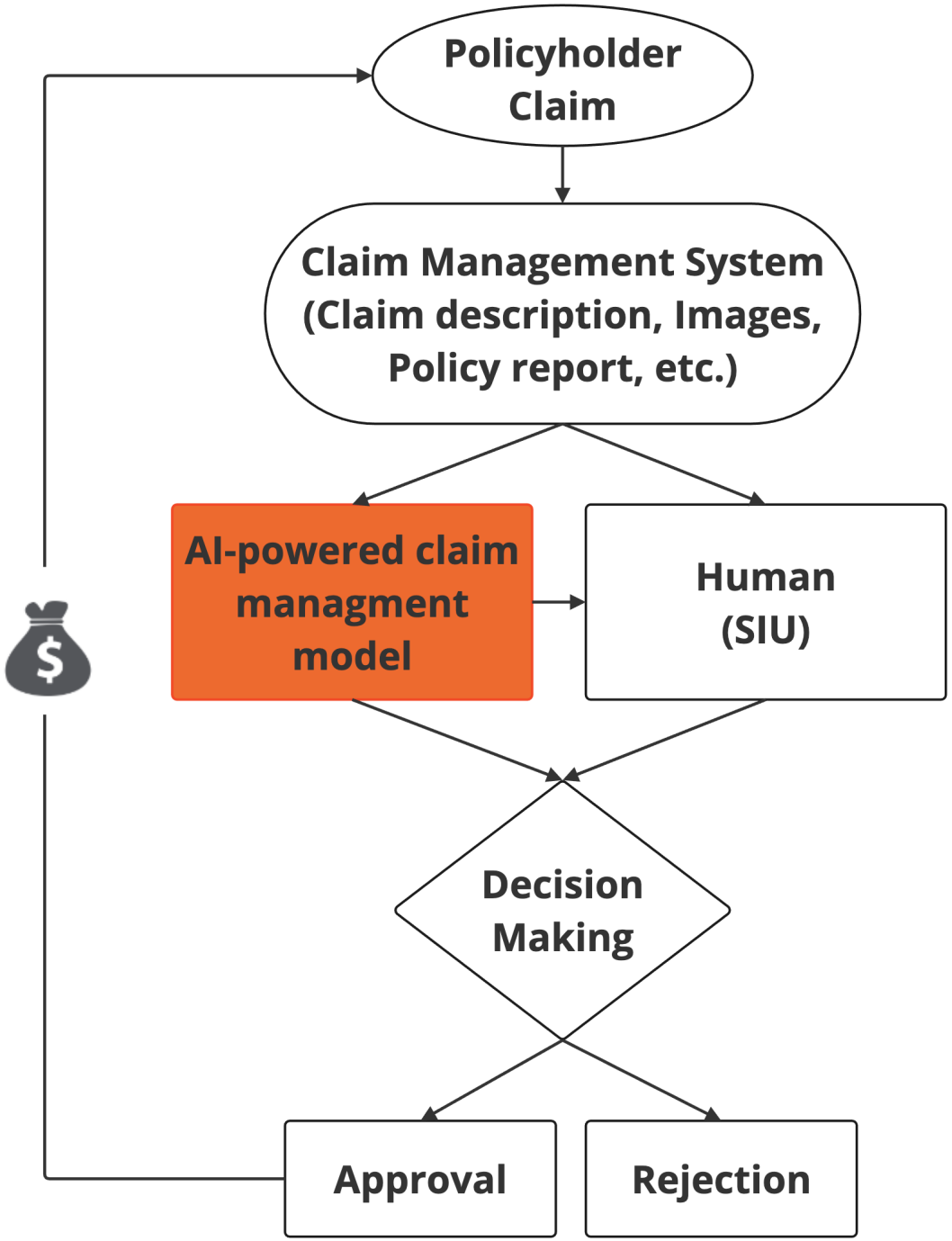
Underwriting



Claim Management

Automated Claims Adjudication:

AI-powered systems can review and process claims autonomously by analyzing documentation, images, and past claims history.

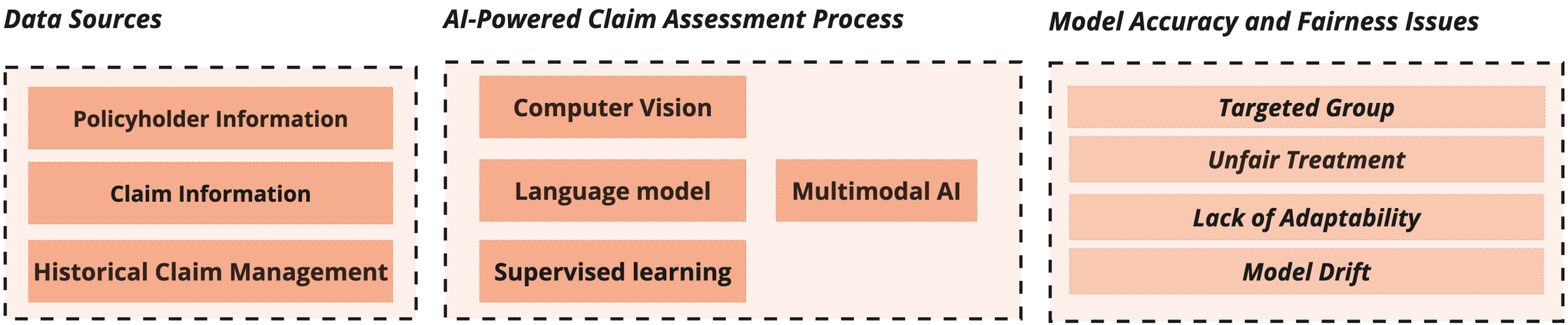


Claim Management

For example, in image recognition for damage assessment, AI models analyze photos of damage (e.g., cars, homes) to assess repair costs and expedite claims processing.

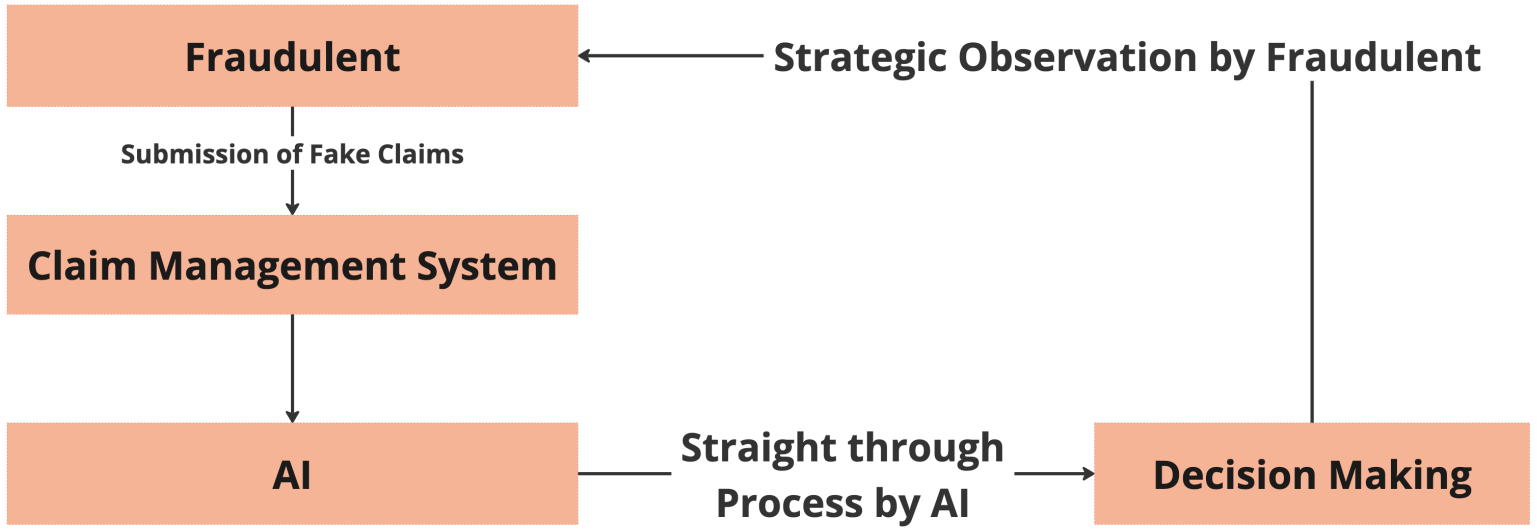
Claim Management

- AI models rely on large amounts of data for learning and prediction when processing automated claims.
- AI models may have many submodules to handle a variety of data, list a few, computer vision, language model, supervised learning.
- Continuous monitoring, regular data audits, and ongoing model validation to mitigate failures.
- Requires a careful balance between automation and human oversight, transparent algorithm development, and a strong commitment to data ethics and regulatory compliance.



Claim Management

Fraud actors may gradually understand how the system judges claim.
For example, by observing which types of claims are easily approved and which claims are frequently rejected, fraud actors can infer the operating rules and judgment criteria of the model. Once these patterns are identified, some fraud actors may intentionally adjust their claims to conform to the model's "preferred" patterns, thereby increasing the probability of the claim being approved or exaggerating the extent of the damage without arousing suspicion.



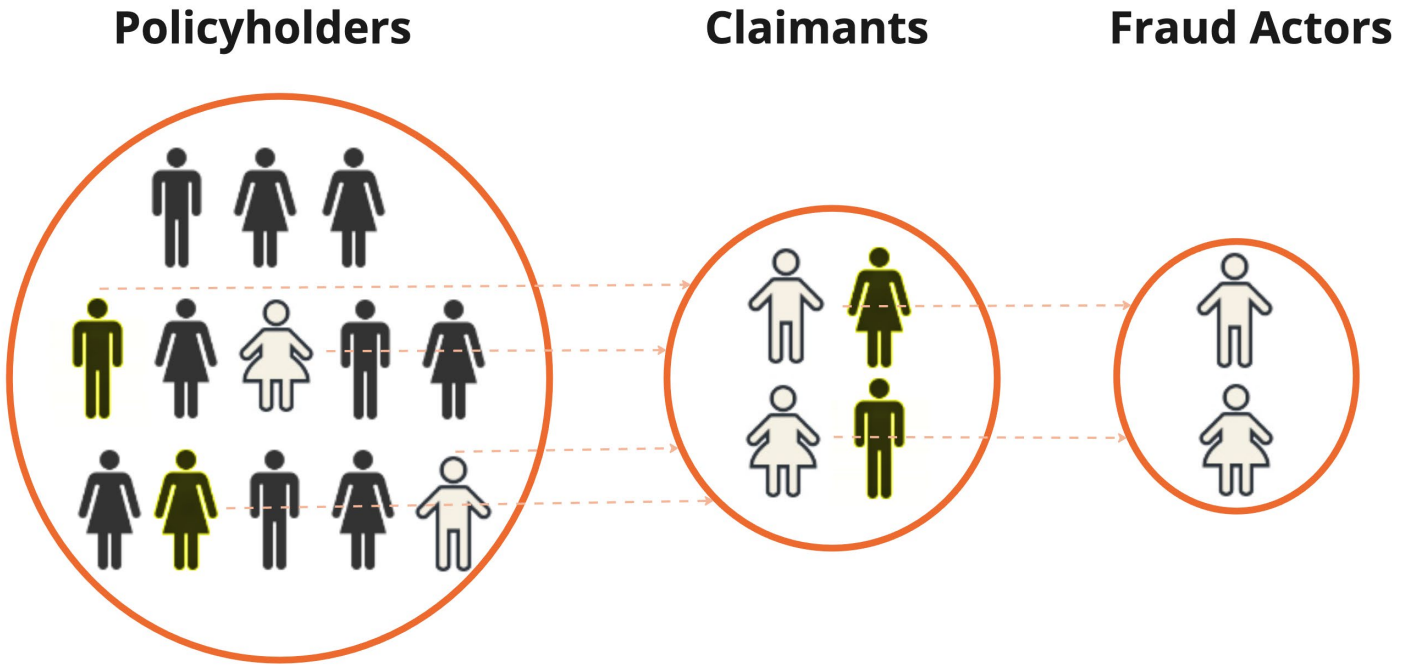
Fraud Detection

ML algorithms detect patterns indicative of fraud by analyzing claim histories, behavior patterns, and third-party data.

Fraud Detection

Sampling bias

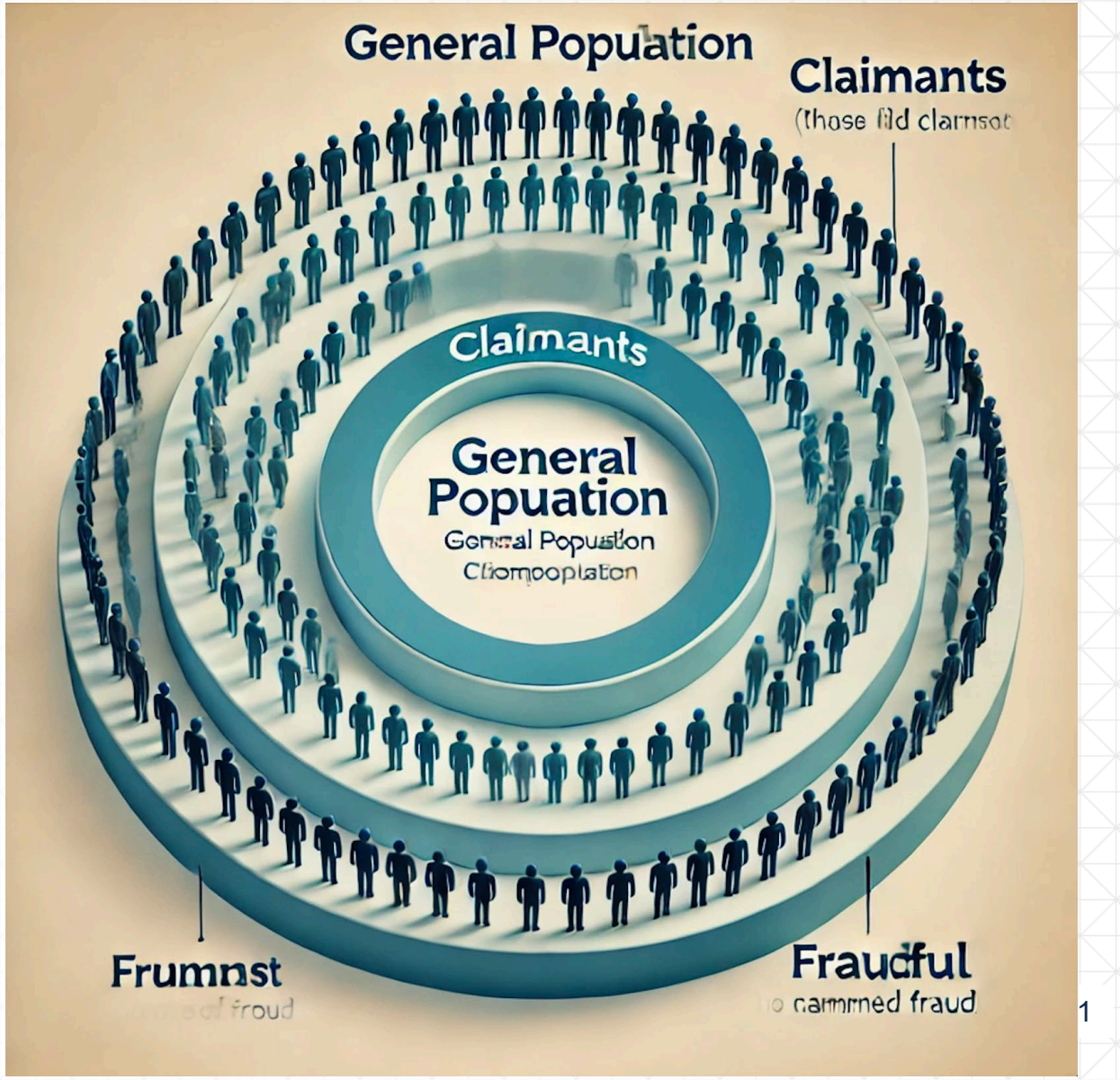
In particular, in fraud detection, if certain regions have fewer samples or a lower proportion of historical fraud, the model may produce excessively high false positive or false negative rates for these groups, resulting in unfair results.



Fraud Detection Gen AI Picture

Generated by ChatGPT

We need the Human-in-the-loop (HITL) AI.



2025 Proposed Charges

BIG DATA AND ARTIFICIAL INTELLIGENCE (H) WORKING GROUP

1. The **Big Data and Artificial Intelligence (H) Working Group** will:
   A. Research the use of big data and AI (including ML) in the business of insurance. Proactively communicate findings and present recommendations to the Innovation, Cybersecurity, and Technology (H) Committee.
   B. Monitor state, federal, and international activities on AI, including working with the Innovation, Cybersecurity, and Technology (H) Committee, (i) to respond to such activities, where appropriate and (ii) address potential impacts on existing state insurance laws or regulations.
   C. Oversee the completion of the work of the Collaboration Forum on Algorithmic Bias, including:
      a. Monitor and support adoption of the Model Bulletin on the use of Artificial Intelligence Systems by Insurers.
      b. Explore the creation of an independent synthetic data sets to support testing of predictive models for unfair discrimination, in collaboration with the Center for Insurance Policy and Research, as appropriate.
      c. Finalize and maintain a glossary/lexicon to guide regulators as they engage in AI and technology related discussions.
   D. Facilitate discussion to consider updates to the regulatory framework for the oversight of the use of artificial intelligence by insured entities. Provide recommendations to the Innovation, Cybersecurity, and Technology (H) Committee in response to such activities.
      a. Monitor and support adoption of the Model Bulletin on the use of Artificial Intelligence Systems by Insurers.
      b. Monitor and report on state, federal, and international activities related to governmental oversight and regulation of the use of artificial intelligence in insurance and non-insurance industries.
      c. Research, identify, and monitor the impacts of the use of AI systems by insurance companies to understand the potential benefits, value propositions, risks and adverse consumer outcomes related to the use of AI Systems.
   E. Facilitate discussion related to AI Systems Evaluation including:
      a. Identify existing tools, resources, materials, and training that will assist and guide regulators in their review of AI Systems used by licensees, including an insurer's AI Program. This includes establishing a coordinated work plan and timeline for further development of those resources.
      b. Develop new regulatory tools or regulatory guidance to assist regulators in their review of AI Systems used by licensees, including an insurer's AI Program.
      c. Coordinate the development of review and enforcement tools, resources, guidelines, and training related to AI Systems for regulators across the NAIC.
   F. Oversee the work of the Data Call Study Group as they work with the public to improve existing data processes while addressing data needs across insurance lines of business.
   G. Facilitate and coordinate foundational and contextual educational content for regulators on topics related to the use of Big Data and Artificial Intelligence techniques, tools and systems in the insurance industry.

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