AI Ethics Case Study

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Introduction

     Imagine you are David Cordani, CEO and Chairman of The Cigna Group, at an executive leadership meeting. You are seated in a round-table conference room in Bloomfield, Connecticut listening to your leadership group provide their operational updates.

     Nicole Jones, Executive Vice President and General Counsel, stands up and announces that The Cigna Group faces a current dilemma: two class action lawsuits alleging that Cigna is using an artificial intelligence algorithm, known as "Procedure to Diagnosis"(PxDx), to systematically deny patient claims without a physician review. Ms. Jones discusses the complaints in the lawsuits and recommends that Cigna stop using the PxDx technology in the medical claims review process because of the litigation and regulatory risks.

     Noelle Eder, Executive Vice President and Chief Information Officer, jumps in to defend PxDx, arguing that the innovative technology is improving patient experience and company efficiencies. Brian Evanko, who is both the President for Cigna Healthcare (a division of The Cigna Group that provides health insurance) and the Chief Financial Officer of The Cigna Group, chimes in about how the PxDx technology is reducing costs and thus increasing profits for The Cigna Group. Both sides argue back and forth, discussing the risks and rewards of continuing with the PxDx technology in the medical claims review process. Suddenly the conversation stops and Mr. Evanko asks for your input. *What do you, as the CEO of The Cigna Group, suggest?*

Lawsuits

Two class-action lawsuits were filed against The Cigna Group and Cigna Healthcare in 2023 and 2024. Kisting-Leung et al. v. Cigna Corporation et al. and Sachs v. Cigna Corporation et al. allege that Cigna systematically, wrongfully, and automatically deny their insureds the thorough, individualized physician review of claims guaranteed to them by law and, ultimately, the payments for necessary medical procedures owed to them under Cigna's health insurance policies[1].

Both complaints allege that Cigna developed the PxDx algorithm for their medical claims review process, enabling their doctors to automatically reject claims on medical grounds in batches of hundreds or thousands at a time for treatments that do not match certain preset criteria, without ever opening individual patient files. The complaints allege that Cigna failed to use reasonable standards in evaluating the individual claims of the Plaintiffs and Class members and by engaging in this misconduct, Cigna breached its fiduciary duties, including its duty of good faith and fair dealing, because their conduct serves Cigna's own economic self interest and elevates Cigna's interest above the interests of their insureds[2].

Kisting-Leung et al. v. Cigna Corporation et al.

The case of Kisting-Leung et al. v. Cigna Corporation et al. was filed in the U.S. District Court for the Eastern District of California on July 24, 2023. The plaintiffs, Suzanne Kisting-Leung and Ayesha Smiley, claim that Cigna's use of the PxDx algorithm violates the

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[1] Kisting-Leung, S., & Smiley, A. v. Cigna Corporation, et al. (2023, July 24). Case No. 2:23-cv-01477. U.S. District Court for the Eastern District of California.
[2] Kisting-Leung, S., & Smiley, A. v. Cigna Corporation, et al. (2023, July 24). Case No. 2:23-cv-01477. U.S. District Court for the Eastern District of California.

implied covenant of good faith and fair dealing, California's Unfair Competition Law, and deprives them of their right to a fair evaluation of their health insurance claims[3].

On August 19, 2022, Ms. Kisting-Leung underwent a transvaginal ultrasound after being referred by her doctor due to a suspected risk of ovarian cancer. The ultrasound results revealed that Ms. Kisting-Leung had a dermoid cyst on her left ovary[4]. Around October 2022, Ms. Kisting-Leung received a letter from her medical provider informing her that Cigna denied her claim for the ultrasound procedure, stating that the procedure was not medically necessary. As a result, Ms. Kisting-Leung was left responsible for the $198 bill and appealed Cigna's decision[5]. On November 30, 2022, Ms. Kisting-Leung was referred to and underwent another transvaginal ultrasound. Ms. Kisting-Leung's doctor confirmed the necessity of the procedure upon referral. Around December 2022, Ms. Kisting-Leung was informed by her medical provider that Cigna again denied coverage for her claim, stating that the procedure was not medically necessary. On May 18, 2023, Ms. Kisting-Leung received a $525 bill from her medical provider for the second ultrasound. Ms. Kisting-Leung immediately appealed Cigna's decision to deny her claim. To the filing date, Cigna had not paid either of Ms. Kisting Leung's claims[6]. According to Cigna's Medical Coverage Policy, a transvaginal ultrasound is considered "medically necessary for the evaluation of suspected pelvic pathology or for screening or surveillance of a woman at increased risk for ovarian or endometrial cancer[7].

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[3] Kisting-Leung, S., & Smiley, A. v. Cigna Corporation, et al. (2023, July 24). Case No. 2:23-cv-01477. U.S. District Court for the Eastern District of California.
[4] Kisting-Leung, S., & Smiley, A. v. Cigna Corporation, et al. (2023, July 24). Case No. 2:23-cv-01477. U.S. District Court for the Eastern District of California.
[5] Kisting-Leung, S., & Smiley, A. v. Cigna Corporation, et al. (2023, July 24). Case No. 2:23-cv-01477. U.S. District Court for the Eastern District of California.
[6] Kisting-Leung, S., & Smiley, A. v. Cigna Corporation, et al. (2023, July 24). Case No. 2:23-cv-01477. U.S. District Court for the Eastern District of California.
[7] Kisting-Leung, S., & Smiley, A. v. Cigna Corporation, et al. (2023, July 24). Case No. 2:23-cv-01477. U.S. District Court for the Eastern District of California.

Around January 2023, Ms. Smiley's doctor determined that it was medically necessary to check her Vitamin D levels to confirm she had no Vitamin D deficiency. Accordingly, Ms. Smiley's doctor ordered such a test, which was administered the same month. Around January 2023, Cigna verbally informed Ms. Smiley that Cigna denied her claim and she was required to pay for the testing out-of-pocket. Ms. Smiley did not receive any written correspondence from Cigna explaining the reasons for the denial, as required by Cal. Code Regs. tit. 10, § 2695.7 (b)(1)[8].

To determine whether a submitted claim is medically necessary, Cigna is required to conduct and diligently pursue a "thorough, fair, and objective" investigation into each bill for medical expenses submitted, per California Insurance Regulations, Cal. Code Regs. tit.10, § 2695.7 (d)[9]. This means Cigna's medical directors must examine patient records, review coverage policies, and use their expertise to decide whether to approve or deny claims to avoid unfair denials.

The two plaintiffs allege that Cigna neither provided a "thorough, fair, and objective" investigation of their claims nor any written correspondence explaining the reasons for the denial. They also allege that Cigna's denials were illegal because they violated California law requiring that a licensed physician examine claims[10].

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[8] Kisting-Leung, S., & Smiley, A. v. Cigna Corporation, et al. (2023, July 24). Case No. 2:23-cv-01477. U.S. District Court for the Eastern District of California.
[9] Kisting-Leung, S., & Smiley, A. v. Cigna Corporation, et al. (2023, July 24). Case No. 2:23-cv-01477. U.S. District Court for the Eastern District of California.
[10] Reisdorf, P. (2023, October 16). Healthcare Giant Cigna Sued For Using Algorithm to DenyClaims. https://www.corpwatch.org/article/healthcare-giant-cigna-sued-using-algorithm-deny-claims

Sachs v. Cigna Corporation et al.

The case Sachs v. Cigna Corporation et al. is a consumer class action lawsuit filed in the U.S. District Court for the District of Connecticut on March 11th, 2024. The Plaintiff, Andrew Sachs, alleges that Cigna's algorithm, PxDx, automatically denied over 300,000 medical claims without review and Cigna's doctors confirmed these denials in batches without checking patients' individual files, a requirement under Connecticut law[11].

Mr. Sachs, a Nevada resident, requires a specific injection medication as the only effective treatment for his neurological condition[12]. His neurologist submitted a prior authorization for the injection, but Cigna requested more information, which was promptly provided. Despite this, Cigna denied coverage for the injection five times. Cigna then requested additional tests and referred Mr. Sachs to facilities hundreds of miles away, despite his residence in a major metropolitan area. These delays and denials by Cigna are alleged to have caused Mr. Sachs further neurological damage[13]. Additionally, the complaint details Cigna's denial of a PET scan initially recommended for Mr. Sachs' neurological condition. Despite Mr. Sachs providing medical records and his doctor's order and justification for the scan, Cigna denied the request twice, citing the need for a peer-to-peer review with the doctor, who had limited availability[14]. Finally, after several phone calls where Cigna did not acknowledge reviewing the updated reports, Cigna approved the request for the PET scan in February 2023[15]. The PET scan revealed

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[11] Cousins, E. (2024, March 13). Cigna uses algorithm that auto-denied 300,000 claims, alleged in lawsuit. Benefits Pro. https://www.benefitspro.com/2024/03/13/cigna-class-action-algorithm-allegedly-auto-denies-300000-claims-412-163851/?slreturn=20240417173904

[12] Sachs, A. v. Cigna Corporation et al. (2024, March 11). Case No. 3:24-cv-00329. U.S. District Court for the District of Connecticut.

[13] Sachs, A. v. Cigna Corporation et al. (2024, March 11). Case No. 3:24-cv-00329. U.S. District Court for the District of Connecticut.

[14] Sachs, A. v. Cigna Corporation et al. (2024, March 11). Case No. 3:24-cv-00329. U.S. District Court for the District of Connecticut.

[15] Sachs, A. v. Cigna Corporation et al. (2024, March 11). Case No. 3:24-cv-00329. U.S. District Court for the District of Connecticut.

early-stage Alzheimer's disease, for which treatment is crucial to slow down the progression. Mr. Sachs argues that Cigna's initial denials and delays regarding the injection request and the PET scan may have caused him irreversible damage[16].

Cigna's failure to "pay claims without conducting a reasonable investigation based upon all available information" is a violation of Conn. Gen. Stat. § 38a-816(6)(D)[17]. Cigna's medical directors are required under Connecticut law to examine patient records, review coverage policies, and use their expertise to decide whether to approve or deny claims to avoid unfair denials.

Mr. Sachs alleges that Cigna's failure to conduct a reasonable investigation based on all available information is a violation of Connecticut law and Cigna fraudulently misled their insureds into believing their health plan would individually assess their claims and pay for medically necessary procedures[18].

The Cigna Group

The Cigna Group is a for profit multinational healthcare and insurance company. The company offers life, accident, disability, health, supplemental, medicare, and dental insurance products and services. The Cigna Group serves individuals, families, and businesses worldwide. The Cigna Group was formed in 1982 by a merger between the Connecticut General Life Insurance Company (CG) and INA Corporation (the parent corporation of Insurance Company of North America), and has become one of the largest health insurance companies in the world.

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[16] Sachs, A. v. Cigna Corporation et al. (2024, March 11). Case No. 3:24-cv-00329. U.S. District Court for the District of Connecticut.
[17] Sachs, A. v. Cigna Corporation et al. (2024, March 11). Case No. 3:24-cv-00329. U.S. District Court for the District of Connecticut.
[18] Sachs, A. v. Cigna Corporation et al. (2024, March 11). Case No. 3:24-cv-00329. U.S. District Court for the District of Connecticut.

Cigna's stated mission is to improve the health and vitality of those they serve.[19] Cigna has over 70,000 employees in over thirty countries and reported $195.3 billion in revenues for FY2023, an 8% increase from the previous year[20]. They have 10% of the market share in the commercial health insurance industry[21]. Cigna claims to have over two million relationships with health care providers, clinics, and facilities, and over 178 million customer relationships globally[1].

Divisions

Evernorth Health Services: partners with health plans, employers, governmental organizations and health care providers to solve challenges in the areas of pharmacy benefits, home delivery pharmacy, specialty pharmacy, specialty distribution, and care delivery and management solutions. Within Evernorth Health Services, pharmacy benefits and home delivery pharmacy are foundational growth businesses and specialty pharmacy, specialty distribution, and care delivery and management solutions are accelerated growth businesses[22].

Cigna Healthcare: includes the U.S. Healthcare and International Health operating segments, which provide comprehensive medical and coordinated solutions to clients and customers. U.S. Healthcare provides commercial medical plans and specialty benefits and solutions for insured and self-insured clients (U.S. Employer), Medicare Advantage, Medicare Supplement and Medicare Part D plans for seniors and individual health insurance plans. International Health provides health care solutions in the international markets, as well as health care benefits for globally mobile individuals and employees of multinational organizations.

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[19] The Cigna Group's website: URL
[20] Bloomberg
[21] "AMA identifies market leaders in health insurance" : URL
[22] The Cigna Group 2023 10-K Statement (p.2)

Within Cigna Healthcare, U.S. Employer and International Health are foundational growth businesses[23].

Financials

The Cigna Group reported $195.3 billion in revenue for 2023[24]. They reported $44.24 billion in premiums earned in 2023 which is a 10.83% increase from 2022 where they reported $39.92 billion[6]. The Cigna Group earned $1.17 billion from investment income in 2023 and they reported $147.93 billion in total assets[6]. Cigna Healthcare, the division of The Cigna Group that offers insurance products and services, reported adjusted revenues of $51.2 billion and pre-tax adjusted income from operations of $4.5 billion[25].

The Cigna Group describes the health and medical insurance industry as "highly competitive" and "rapidly changing"[26]. They face competition from major key players in the industry such as UnitedHealth Group Inc, Humana Inc, Aetna (CVS Health Corp), Elevance Health Inc, and Centene Corp. Refer to Figure 1 for a Comparable Company analysis, which is a valuation method that compares similar public companies based on their profitability and growth ratios.

Figure 1

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[23] The Cigna Group 2023 10-K Statement (p.3)
[24] The Wall Street Journal: URL
[25] The Cigna Group 2023 10-K Statement (p.12)
[26] The Cigna Group 2023 10-K Statement (p.30)

The Cigna Group Comparable Company Analysis ($ in millions, except per share data) Data from Bloomberg (FY 2023)		Market Cap (M)	P/E	EV/EBITDA	ROIC	FCF	Net Debt/ EBITDA	Gross Margin	EBITDA Margin	Operating Margin	Earnings Per Share
Company	Ticker										
The Cigna Group	CI	87625.1	13.8x	9.5x	10.1%	10,240.00	1.94x	12.9%	6.0%	4.4%	17.57
UnitedHealth Group Inc	UNH	486945.4	22.1x	14.2x	15.9%	25682.0	1.00x	24.5%	10.2%	8.7%	24.12
CVS Health Corp	CVS	101613.4	10.4x	8.3x	6.6%	10,395.00	3.30x	15.2%	5.8%	3.8%	6.49
Humana Inc	HUM	56361.3	17.7x	9.4x	10.7%	2,977.00	-2.04x	16.9%	4.6%	3.8%	20.09
Elevance Health Inc	ELV	110797.3	13.2x	9.5x	10.4%	6,765.00	-0.98x	17.3%	6.2%	5.1%	25.38
Centene Corp	CNC	39643.1	12.7x	8.5x	4.8%	7,254.00	-0.17x	20.5%	3.0%	1.9%	4.97
Mean		159072.1	15.2x	10.0x	9.7%	10614.6	0.22x	18.9%	5.9%	4.7%	16.2
Median		101613.4	13.2x	9.4x	10.4%	7254	-0.17x	17.3%	5.8%	3.8%	20.1

Market capitalization, sometimes referred to as market cap, is the total value of a publicly traded company's outstanding common shares owned by stockholders. Market capitalization is equal to the market price per common share multiplied by the number of common shares outstanding. Cigna's market capitalization is below its competitors' average suggesting that they may have a smaller presence in the market compared to their competitors. The price-earnings ratio measures a company's current share price relative to its per-share earnings. The higher the ratio, the more expensive a stock is relative to its earnings. The lower the ratio, the less expensive the stock[27]. Cigna's P/E ratio is slightly below the industry mean, suggesting their stock is less expensive relative to its earnings compared to their competitors. EV/EBITDA is a common valuation ratio that compares a company's Enterprise Value (EV) to its Earnings Before Interest, Taxes, Depreciation & Amortization (EBITDA)[28]. Typically, an EV/EBITDA value below 10x is considered healthy, and The Cigna Group's EV/EBITDA is 9.5x and in the range of its target competitors. Return on invested capital (ROIC) assesses a company's efficiency in allocating capital to profitable investments. Generally, a ROIC above 10% is considered healthy and the Cigna Group's ROIC is 10.1% and slightly above the industry mean. Free cash flow (FCF) demonstrates how much cash a company has left over after paying its operating expenses and maintaining its capital expenditures[29]. Typically, the higher the FCF the better and The Cigna

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[27] Forbes: URL
[28] Corporate Finance Institute: URL
[29] Investopedia: URL

Group's FCF is slightly below the industry mean. Net debt-to-EBITDA is a leverage ratio that compares a company's liabilities in the form of net debt to its "cash flow," in the form of EBITDA. A low ratio (below 3) is favorable, indicating a company's capacity to repay debts and potentially better credit ratings. Conversely, a high ratio (4 to 6+) raises red flags, signaling potential financial distress and risks for investors and creditors[30]. The Cigna Group's Net Debt/ EBITDA is on the higher end of its peers, but it is still in the lower range (below 3). The gross profit margin is a metric used to assess a firm's financial health and is equal to revenue less the cost of goods sold as a percent of total revenue. Their gross margin is below the industry averages, suggesting that they are retaining less in revenue from their peers due to higher costs. The EBITDA margin measures how much cash profit a company made in a given year, and generally, an EBITDA margin above 10% is favorable. Although The Cigna Group's EBITDA margin is below 10%, it falls slightly above the industry average. Operating margin measures the percentage of revenue a company keeps as operating profit. This is an important metric because it indicates to investors the profitability of a business. The Cigna Group's operating margin is slightly below their peers, suggesting they are generating less operating profits. Finally, Earnings Per Share (EPS) is a company's net income subtracted by preferred dividends and then divided by the number of common shares it has outstanding. EPS indicates how much money a company makes for each share of its stock and is a widely used metric for estimating corporate value[31]. A higher EPS indicates greater value because investors will pay more for a company's shares if they think the company has higher profits relative to its share price[13]. The Cigna Group's EPS is slightly higher than its industry mean, suggesting that investors are willing to pay a higher price for its shares.

[30] Corporate Finance Institute: URL
[31] Investopedia: URL

Investment and Innovation

Cigna heavily invests in technology and data analytics to improve healthcare outcomes, enhance patient care, and manage healthcare costs effectively. Its mobile apps and online services provide convenient access to health services, reflecting a commitment to modernizing patient engagement and streamlining healthcare management. Cigna, like many other major healthcare insurance providers, has increasingly incorporated artificial intelligence (AI) into its operations, particularly for processing and reviewing insurance claims. This use of AI technology is aimed at enhancing efficiency, accuracy, and speed in claim management, which is crucial for both the insurer and the insured. Cigna has implemented a "Procedure to Diagnosis" (PxDx) process aimed at accelerating payments to physicians for common, low-cost tests and treatments.

Stock price fluctuations

Cigna's stock has demonstrated notable stability in the face of these recent legal challenges, suggesting that investors might not see these lawsuits as detrimental to the company's long-term value or that the impacts of these legal matters are effectively managed by the company, minimizing financial disruptions.
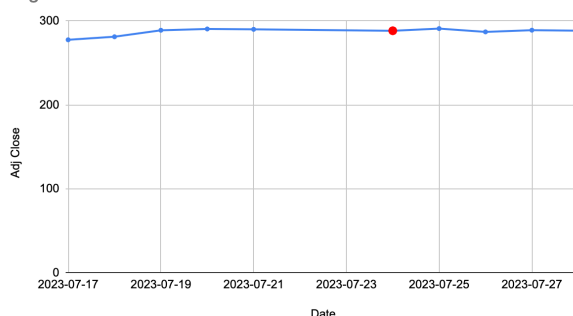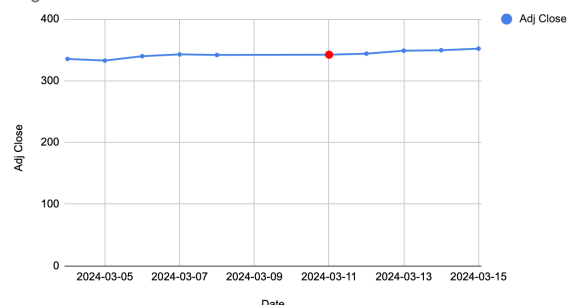
Figure 2 - Cigna's stock price from 17 July 2023 to 28 July 2023 (Lawsuit filed - 24 July 2023)

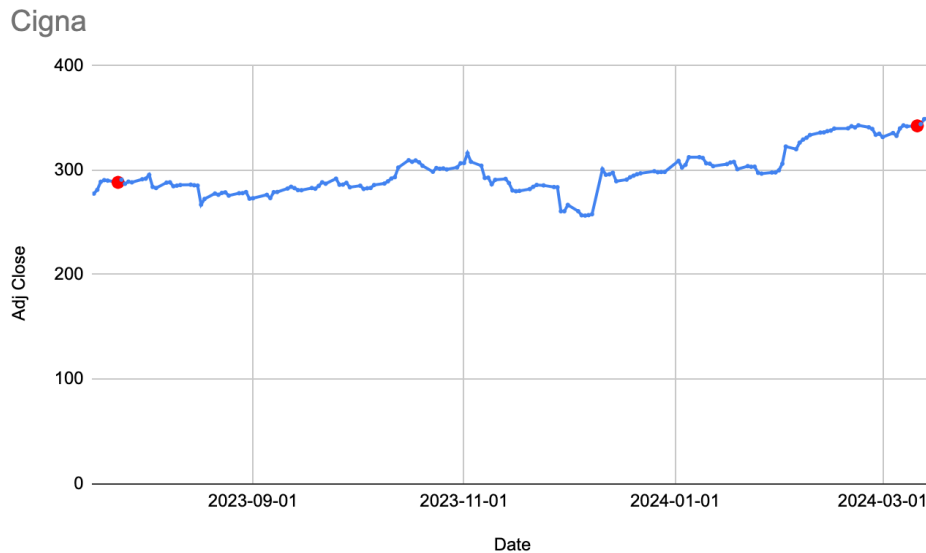*Figure 3 - Cigna's stock price from 3 March 2024 to 15 March 2024*

Figure 4 - Cigna's stock price between the July 2023 - March 2024

During July 2023, when the lawsuit was filed Cigna (Figure 2) showed stability in stock prices around the $300 mark. The stock price shows little to no volatile movement, indicating investor confidence or a lack of surprise at these legal proceedings.

Figure 3 shows Cigna's stock price around the second lawsuit (March 11, 2024) remaining quite stable at just over $340. The market reaction seems muted, suggesting that either the lawsuit was anticipated and already priced in or considered to have a limited impact on the company's overall financial health.

Cigna stock exhibits a stable trend above $300, peaking near $400 before experiencing a significant drop around November 2023, then recovering and stabilizing again. The red dots in Figure 4 indicate the times of the lawsuits. It is interesting to note that the stock shows resilience by maintaining a level above $300 despite these legal difficulties for the company.[32]

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[32] Yahoo Finance. (2024). Cigna Corporation (CI) Stock Price, News, Quote & History. Retrieved from https://finance.yahoo.com/quote/CI

Cigna's Claims Review Process

Cigna has a standard claims review process. The process involves a "prior authorisation" where specific medical procedures require approval from Cigna before the treatment is rendered. These codes must align with what is termed necessary according to Cigna's clinical coverage policies. This procedure cross verifies the coverage until the patient's health care plan. Following the pre approval, the claims are submitted by providers or patients. For low cost, uncomplicated procedures, Cigna employs the PxDx - Procedure to Diagnosis system. The PxDx screening process involves a post service review where the software is utilized to match the procedure codes submitted by physicians with the corresponding diagnosis codes. After the claim is approved, payments are processed directly to providers or patients. An Explanation of Benefits (EOB) is issued, describing how each claim was handled and outlining patient financial responsibilities.[33]

Why are claims denied?

When your insurance company refuses to pay for the treatment/ surgery/ drug post the service being performed , it is called a "claim denial". A claim can be denied for a variety of reasons including lack of prior authorization or referral, out-of-network provider, exclusion of a service, based on medical necessity.

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[33] Cigna. (n.d.) . Claims and Explanation of Benefits (EOB)*. Retrieved from
https://www.cigna.com/individuals-families/member-guide/claims-and-eobs](https://www.cigna.com/individuals-families/member-guide/claims-and-eobs

Centers for Medicaid and Medicaid services (*Health Insurance Exchange Public Use Files)* reported 41.7 Million in-network denials in 2021. Out of which 3 Million denials were repaid. The reasons behind these denials can be categorized into lack of prior authorization or referral (8.0%), lack of excluded service(13.5%), based on medical necessity regarding behavioral health (0.7%), based on medical necessity regarding other services(1.7%) and miscellaneous(76.5%). This data was collected prior to Cigna launching their AI algorithms to review claims.[34][35]

PXDX Technology

PXDX technology represents an advancement in predictive and generative AI, developed to address complex challenges across various industries. It integrates predictive analytics with generative capabilities, allowing for enhanced forecasting accuracy and the generation of realistic data samples.[36]

PXDX Company Information, Mission and Values

PXDX was founded with a vision to harness the power of AI for positive societal impact. Its inception stemmed from the recognition of the potential of predictive and generative AI to address complex challenges and drive innovation across industries. Since its establishment, PXDX has remained committed to advancing AI research and development while upholding ethical principles and values.

[34] Karen Pollitz, J. L. (2023, March 29). *Claims denials and appeals in ACA Marketplace plans in 2021.* KFF. https://www.kff.org/private-insurance/issue-brief/claims-denials-and-appeals-in-aca-marketplace-plans/
[35] *Health Insurance Exchange Public Use Files (exchange pufs)*. CMS.gov. (n.d.). https://www.cms.gov/marketplace/resources/data/public-use-files
[36]Cigna Healthcare. (2023, July 27). Cigna Healthcare affirms its approach to expediting physician payments. https://newsroom.cigna.com/2023-07-27-Cigna-Healthcare-Affirms-its-Approach-to-Expediting-Physician-Payments

PXDX's mission is to develop cutting-edge AI technologies that empower organizations to make informed decisions and drive meaningful outcomes[37]. The company claims to value integrity, innovation, and social responsibility, striving to create AI solutions that benefit society while minimizing potential risks and harms. PXDX is dedicated to fostering a culture of diversity, inclusion, and ethical leadership within its organization and the broader AI community.

Research and Development

PXDX's research and development initiatives focus on pushing the boundaries of AI innovation and addressing real-world challenges. The company collaborates with leading academic institutions, research organizations, and industry partners to advance AI technology and explore new applications. PXDX invests in interdisciplinary research areas, including machine learning, natural language processing, computer vision, and reinforcement learning, to drive continuous advancements in predictive and generative AI.[38]

Core Components and Applications of PXDX

At the heart of PXDX technology lies a sophisticated algorithmic framework that leverages deep learning techniques, including neural networks and reinforcement learning. The model architecture is designed to process vast amounts of data efficiently, enabling it to extract meaningful insights and generate valuable predictions. Additionally, PXDX incorporates advanced data preprocessing and feature engineering techniques to optimize model performance.

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[37] PXDX. (n.d.). https://pxdx.co/
[38] PXDX. (n.d.). https://pxdx.co/

PXDX technology has broad applications across diverse sectors, including healthcare, finance, marketing, and beyond. In healthcare, PXDX facilitates patient outcome predictions, drug discovery, and personalized treatment recommendations. In finance, it powers stock market forecasting, risk assessment, and algorithmic trading strategies. Moreover, PXDX enhances marketing and advertising efforts by generating targeted customer profiles and predicting consumer behavior patterns.

Ethical Implications and Bias Mitigation

While PXDX boasts of its efforts to mitigate bias and ensure fairness in its AI technology, there are glaring gaps in its approach that raise concerns. Despite claims of algorithmic transparency, the company's disclosure practices remain insufficient, leaving stakeholders in the dark about the inner workings of its models. Furthermore, while PXDX emphasizes fairness-aware training, it falls short in integrating these techniques effectively, risking the perpetuation of biases. The company's commitment to continuous monitoring and evaluation lacks depth, as it fails to conduct rigorous audits for bias and fairness on a regular basis. Additionally, PXDX's adherence to ethical guidelines appears superficial, lacking genuine engagement with affected communities to address their concerns. These shortcomings highlight a need for PXDX to reassess its strategies and prioritize genuine transparency, robust training protocols, and meaningful community involvement to truly mitigate bias and ensure fair AI deployment.

PXDX and Cigna

Cigna integrates PXDX (Patient Experience Data Platform) into its operations with the aim of enhancing patient care, but a critical examination reveals potential challenges and limitations in its utilization.

PXDX enables Cigna to aggregate and analyze patient feedback across various touchpoints, providing valuable insights into patient preferences and concerns. However, the reliability and representativeness of the data collected may be questionable, with certain demographics or segments of patients potentially underrepresented. This could lead to skewed insights and blind spots in understanding patient needs.

Despite access to valuable data and analytics, translating insights into actionable improvements in patient care requires a culture of accountability and responsiveness within Cigna. Organizational inertia or resistance to change may hinder the effectiveness of interventions based on PXDX insights, limiting their impact on patient outcomes.

Additionally, there are concerns regarding data privacy and security associated with PXDX. As Cigna collects and analyzes vast amounts of patient data, there is a heightened risk of data breaches or unauthorized access, raising questions about patient confidentiality and trust. While PXDX offers real-time visibility into key performance metrics and patient sentiment, there is a risk of overreliance on data-driven decision-making. Relying solely on quantitative metrics may overlook qualitative aspects of care delivery, such as the quality of provider-patient interactions.

Technology

Artificial Intelligence (AI) has revolutionized various industries, enabling predictive and generative models to make accurate forecasts and generate novel content. However, as AI becomes increasingly pervasive, concerns regarding bias and ethical implications arise, particularly in generative AI systems.

Understanding Predictive and Generative AI Models

In the realm of artificial intelligence, two powerful methodologies stand out: predictive and generative AI models. Predictive AI harnesses historical data and sophisticated algorithms to forecast future events or trends, guiding informed decision-making across industries. On the other hand, generative AI delves into creativity, generating diverse forms of content such as text, images, and music. While predictive models anticipate outcomes, generative models produce new content, showcasing the breadth of AI's capabilities. Delving into their workings, applications, and ethical considerations reveals the dynamic landscape of AI innovation.
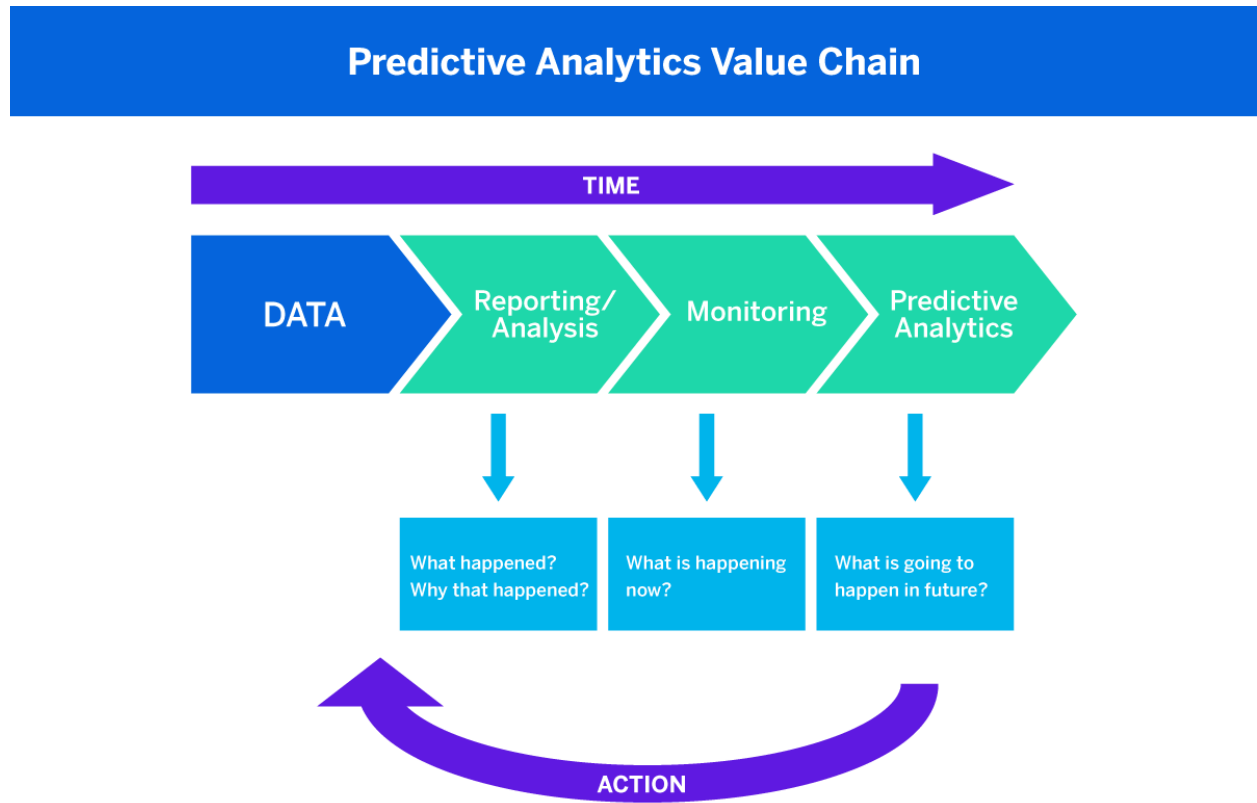
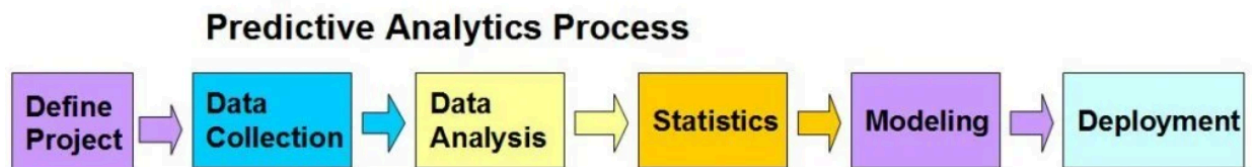Figure - Predictive Analytics Value Chain, [Qualtrics](#)

Figure - Predictive Analytics Process, [PAT Research](#)

Predictive AI Models

Predictive AI models, which are also referred to as forecasting models, utilize sophisticated algorithms to examine historical data and uncover patterns indicative of future events or trends. These models encompass various techniques, including regression analysis, time series forecasting, and machine learning algorithms like decision trees, random forests, and

neural networks. Their applications span diverse domains, including finance for stock market predictions, healthcare for disease diagnosis, and marketing for understanding consumer behavior.

Having been a cornerstone of data-driven decision-making for decades, predictive modeling has continually evolved at the forefront of analytical techniques. By scrutinizing historical data and employing advanced statistical algorithms alongside machine learning methodologies, predictive modeling equips businesses with the tools to make informed decisions, mitigate risks, and capitalize on opportunities.

This technique is a discipline rooted in data mining and statistics, and involves the analysis of both historical and current data to unveil trends that could shape future outcomes. This process entails data collection, statistical model formulation, prediction, and subsequent validation or revision of the model.

While predictive modeling has been in existence for decades, it has recently garnered recognition as a subset of artificial intelligence, particularly with the advent of machine learning. This methodology is adept at predicting the likelihood of specific outcomes based on data collected from analogous past and present events.

For instance, in customer relationship management, predictive modeling can forecast the probability of customer churn, drawing insights from data on past churners and non-churners. Similarly, in service management, such as ticket prioritization, predictive modeling can utilize data from previous tickets to accurately assign priority levels based on textual descriptions, thereby enhancing operational efficiency with each prediction made.
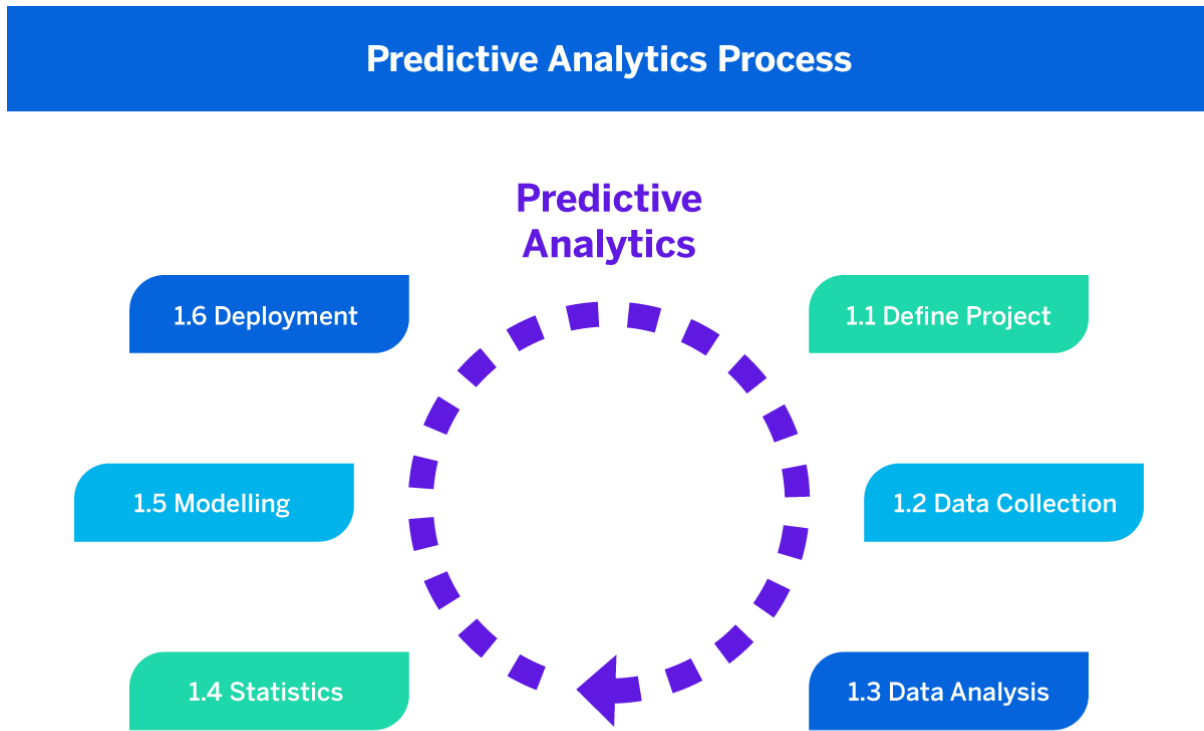
Figure - Predictive Analytics Process, Qualtrics
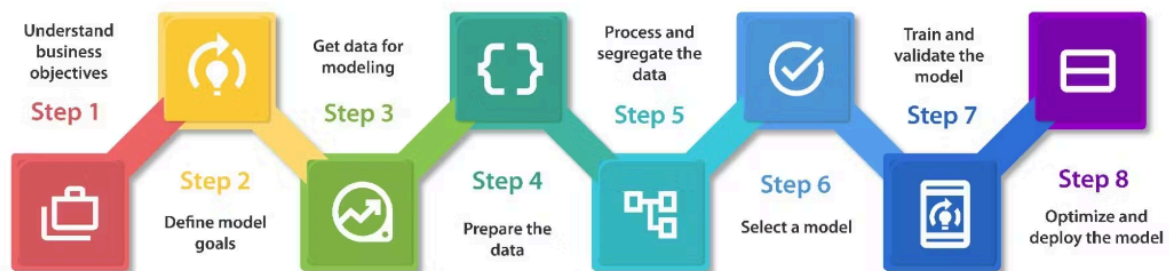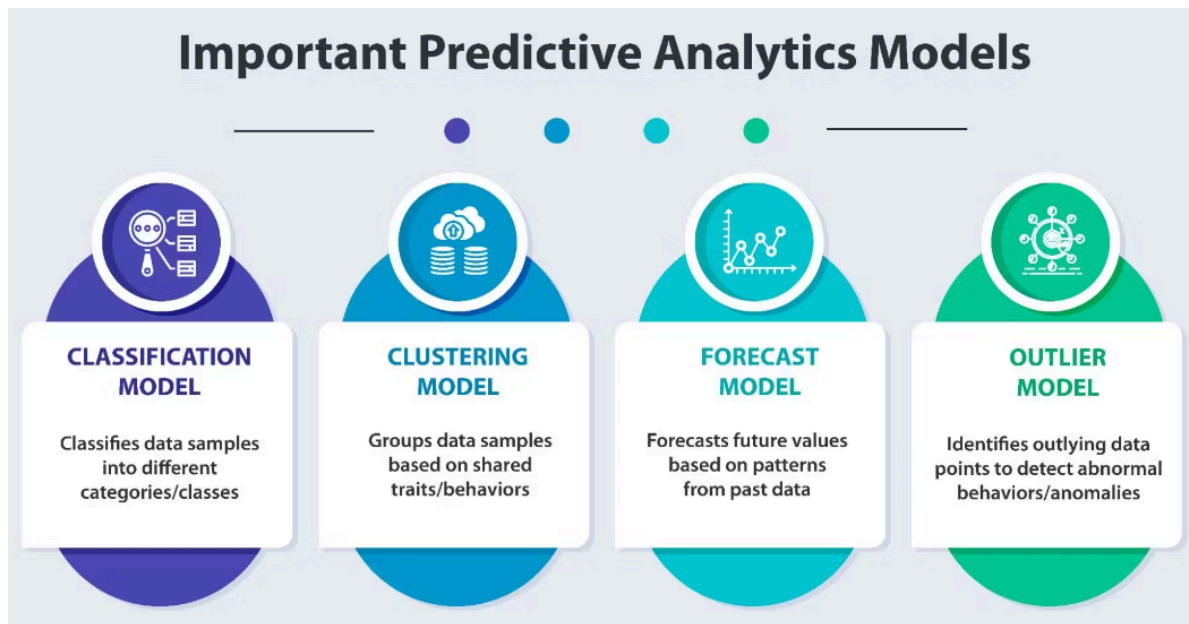

Figure - Predictive Modeling Pipeline, Turing

Figure - Predictive Analytics Models, Turing

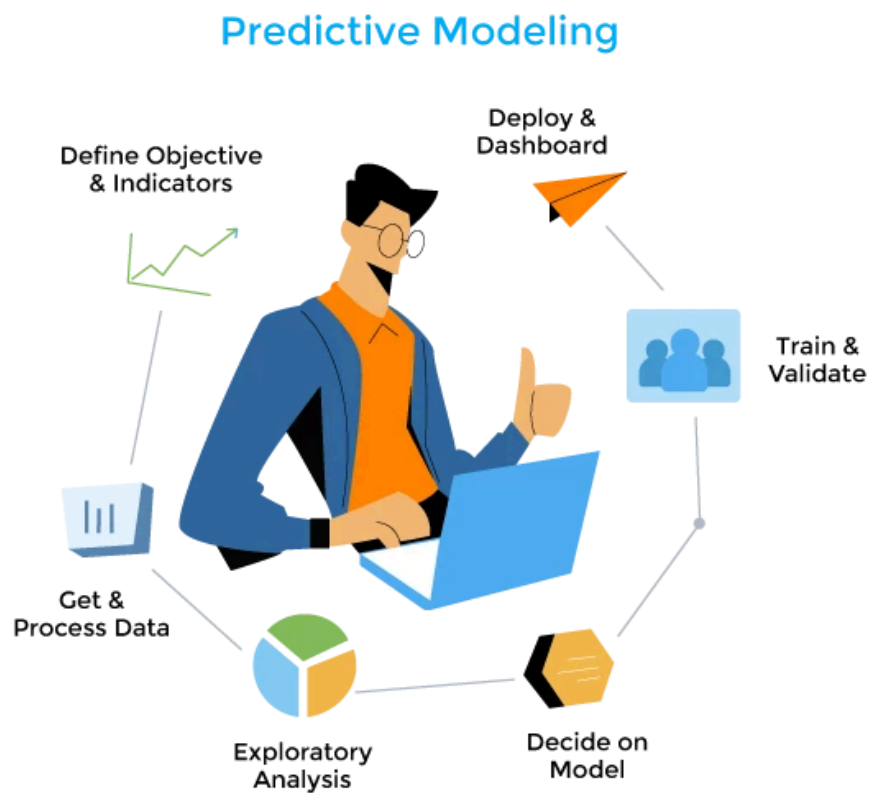Figure - Predictive Modeling, Plutora

Scenarios of Predictive Modeling Utilization

Predictive modeling finds application across various scenarios, leveraging its AI-driven capabilities to enhance decision-making processes and operational efficiency.

Predicting the Best Outcomes: One of the prominent benefits of predictive modeling is its ability to improve decision-making. By compiling relevant information from past use cases, predictive modeling assists in making informed choices for future endeavors. Whether it's forecasting customer churn or predicting market trends, this methodology enables businesses to anticipate outcomes with greater accuracy.

Identifying Hidden Trends: Traditionally, reviewing vast volumes of data manually posed challenges in detecting patterns or trends. However, with the advent of machine learning-driven predictive modeling, this task becomes automated. From analyzing banking transactions to classifying images, predictive modeling efficiently surfaces hidden trends that might otherwise go unnoticed, thereby empowering organizations to make data-driven decisions.

Enhancing Operational Efficiency: Beyond image recognition and classification, predictive modeling extends its utility to areas like text translation and classification. Continuous refinement of live models ensures that they remain relevant and effective, contributing to operational efficiency and process modernization. By leveraging predictive modeling, organizations can optimize revenue streams, streamline processes, and achieve cost savings through improved operational efficiency.

Challenges to Predictive Modeling and AI Adoption

While the potential benefits of predictive modeling are substantial, several challenges hinder its widespread adoption, particularly in the realm of AI and machine learning.

Data Quality and Relevance: Not all data is useful for predictive modeling, and relying on irrelevant or poor-quality data can lead to inaccurate predictions. Ensuring data quality and relevance is crucial to the success of predictive modeling initiatives.

Correlation vs. Causation: Predictive modeling relies on historical data to forecast future events, but correlation between variables does not always imply causation. Understanding the limitations of historical data in predicting future outcomes is essential to avoid erroneous conclusions.

Ethical Considerations: Ethical issues surrounding data handling, algorithm bias, and intellectual property rights present significant challenges in predictive modeling. Organizations must navigate these ethical considerations to ensure responsible and ethical use of predictive modeling techniques.

To address these challenges, organizations must continuously monitor model performance, validate predictions against real-world outcomes, and update models with relevant data. By mitigating risks and leveraging predictive modeling responsibly, businesses can harness its potential to drive informed decision-making and gain a competitive edge in today's data-driven landscape.

The Medical Insurance Industry

The medical insurance industry plays a crucial role in providing financial protection and access to healthcare services for individuals and groups. This industry underwrites (i.e. assumes the risks of and assigns premiums for) health and medical insurance policies.[39] It involves various stakeholders, including insurance companies, healthcare providers, policyholders,

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[39] IBIS World: Health Medical Insurance in the US Industry Report

employers, and government entities. Medical insurance helps individuals mitigate the financial risks associated with healthcare expenses by covering a portion of their medical costs in exchange for premium payments. The key players of the medical insurance industry are divided into three major areas.

1. **Insurance Companies:** These include large national carriers like UnitedHealth Group, Anthem, Cigna, and Aetna (a subsidiary of CVS Health), as well as regional insurers and health maintenance organizations (HMOs).

2. **Employers**: Many employers offer health insurance benefits to their employees as part of their compensation package.

3. **Government Programs**: Medicare provides health insurance for people aged 65 and older, as well as certain younger individuals with disabilities. Medicaid offers coverage for low-income individuals and families.

The U.S. individual health insurance market size was valued at USD 1.60 trillion in 2022 and is expected to expand at a compound annual growth rate (CAGR) of 6.08% from 2023 to 2030 (Grand View Research, 2024). An increase in insurer participation and new product offerings are among the major factors leading to the rising demand for individual health insurance in the U.S. Additionally, the growing prevalence of chronic disorders in the country such as diabetes, cancer, cardiovascular diseases, and neurodegenerative diseases is expected to increase the adoption of individual health insurance. Also, a significant increase in unemployment during the COVID-19 pandemic had a detrimental influence on employee-sponsored health insurance and, to some extent, has provided chances for private insurers (Grand View Research, 2024).

AI in the Medical Insurance Industry

United Healthcare, the largest healthcare insurance company in the United States employs an AI tool "nH predict" to help accelerate their claims review process. The algorithm predicts the level of post-acute care required by a patient on a Medicare Advantage Plan following an acute injury, illness, or event such as a fall or stroke. This post-acute care could involve therapy and specialized services provided by home health agencies, skilled nursing facilities, and inpatient rehabilitation centers. While the specific workings of the nH Predict are not fully described, it is said to assess the necessary post-acute care by analyzing a database with medical case histories of 6 million patients.

According to a lawsuit filed in Minnesota, UnitedHealth allegedly used nH Predict developed by NaviHealth a subsidiary of United Healthcare that systematically denied elderly patients' claims for extended care, including stays in skilled nursing facilities and in-home care overriding physicians . It is claimed that when these denials are appealed to federal administrative law judges, approximately 90% are reversed, highlighting the alleged inaccuracy of the algorithm[40].

Ethics

Ethics is the discipline concerned with what is morally good and bad and morally right and wrong[41]. How should we live? Is it right to be dishonest for a good cause? What are our

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[40] Estate of Gene B. Lokken v. UnitedHealth Group, Inc., No. 23-cv-03514 (D. Minn. November 14, 2023). Complaint filed.

[41] Singer, P. (2024, April 15). Ethics | Definition, History, Examples, Types, Philosophy, & Facts. In Encyclopædia Britannica. https://www.britannica.com/question/What-is-ethics

obligations to those who will come after us? Ethics deals with these questions, and many more, by addressing the fundamental issues of practical decision making and the standards by which human actions can be judged right or wrong[42]. Although ethics is traditionally viewed as a branch of philosophy, its practical application links it to many major fields of study, including biology, business, chemistry, computer science, economics, history, and politics.

Ethical analysis helps with organizational risk management and there are financial and performance benefits for ethical decision making. Ethical, legal, and financially responsible behavior is interconnected and today's ethics are tomorrow's laws. In business, ethics influences a company's culture, employees' motivation and productivity, and business processes' effectiveness. It also impacts an organization's reputation—in terms of how customers, partners, investors, and prospective employees perceive it—and long-term success[43]. Ethics is crucial in STEM fields because it ensures scientific advancements and technological developments consider potential risks, fairness, and the well-being of society alongside their benefits. This helps us avoid unintended consequences and steer innovation towards a positive impact.

Scientists and business professionals alike use ethical frameworks to influence their decision making. The approaches to ethical decision making ask the decision maker to face the ethical dilemma from a certain perspective, and the decision can be made from answering the question in one or more perspectives. Oftentimes, the same course of action can be derived from different approaches and there are benefits and drawbacks to using each approach. Additionally, mitigation is important when making ethical decisions because it helps to balance trade-offs and reduce the impact on a party that is negatively impacted by a decision. Ethical decision making

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[42] Singer, P. (2024, April 15). Ethics | Definition, History, Examples, Types, Philosophy, & Facts. In Encyclopædia Britannica. https://www.britannica.com/question/What-is-ethics
[43] Han, E. (2023, August 3). 7 Ways to Improve Your Ethical Decision-Making. Harvard Business School Online. https://online.hbs.edu/blog/post/ethical-decision-making-process

is a continuous learning process, but ethical decisions make a major difference in innovation and organizational success.

The Duty-Based Approach

Deontological (duty-based) ethics are concerned with what people do, not with the consequences of their actions. According to the duty-based ethical framework, organizations should focus on their values and the duties that come from those values. This framework places a large emphasis on human dignity and autonomy, or treating people as subjects and not objects. Duty-based ethics teaches that some acts are right or wrong because of the sorts of things they are, and people have a duty to act accordingly, regardless of the good or bad consequences that may be produced[44]. Emmanuel Kant, German philosopher and one of the central Enlightenment thinkers, asserts that people have a duty to do the right thing, even if it produces a bad outcome. He is credited with developing the duty-based approach to ethics and claimed that we ought to act in accordance with a universal moral law. Furthermore, he introduced the concept of categorical imperatives. These are universal moral laws which ought to be followed regardless of our own motivations or desires[45].

The Outcome-Based Approach

Utilitarianism, or outcome-based ethics, is used often in the business field. Utilitarianism dictates that a decision to act or not act should be directed towards producing the greatest good for the greatest number of people. According to the outcome-based framework, organizations should consider all of their stakeholders and the costs and benefits for all stakeholders when

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[44] BBC: URL
[45] Healthcare Ethics and Law: URL

making decisions. Utilitarianism was first proposed by Jeremy Bentham and then furthered by John Stuart Mill in the 19th century. Bentham and Mill assert that an action (or type of action) is right if it tends to promote happiness or pleasure and wrong if it tends to produce unhappiness or pain—not just for the performer of the action but also for everyone else affected by it[46].

The Justice and Fairness Approach

Aristotle, Kant and other philosophers contributed to the idea that all equals should be treated equally. But John Rawls presented his Justice Theory in his 1971 book *A Theory of Justice*, and expanded upon several of its themes in his later book *Political Liberalism.* He argues that every person should be treated with fairness and recommends offering equal basic liberties, offering equal opportunities to similar individuals, and offering the highest possible benefits to the less advantaged members of society[47]. His theory balances the two main principles: equality and freedom. According to Rawls, justice requires that any inequalities must benefit all citizens, and particularly must benefit those who will have the least. "Equality sets the baseline; from there any inequalities must improve everyone's situation, and especially the situation of the worst-off"[48]. He asserts that the principles of justice are chosen behind a 'veil of ignorance' which deprives the parties of all knowledge of particular facts about themselves, about one another, and even about their society and its history. The veil of ignorance is designed

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[46] Britannica: URL
[47] Stanford Encyclopedia of Philosophy: https://plato.stanford.edu/entries/rawls/#:~:text=The%20guiding%20idea%20is%20that,of%20Rawls%27s%20theory%20of%20justice.
[48] Stanford Encyclopedia of Philosophy: https://plato.stanford.edu/entries/rawls/#:~:text=The%20guiding%20idea%20is%20that,of%20Rawls%27s%20theory%20of%20justice.

to be a strict position of equality that represents people purely in their capacity as free and equal moral beings[49].

Care Ethics and the Circle of Care Approach

Care ethics implies that there is moral significance in the fundamental elements of relationships and dependencies in human life. Care ethics seeks to maintain relationships by contextualizing and promoting the well-being of care-givers and care-receivers in a network of social relations. Most often defined as a practice or virtue rather than a theory as such, "care" involves maintaining the world of, and meeting the needs of, ourselves and others[50]. Carol Gilligan and Jane Addams are credited with the development of the theory, both emphasizing women's perspectives and promoting high social responsibility standards for caregivers to confront social and political issues that impact care[51].

The circle of care model was designed to assist stakeholders in considering healthcare system changes using a patient centric approach. The Circle of Care is a holistic model that shows how social and behavior change can be applied across the service continuum—before, during, and after services—to improve health outcomes[52]. The model focuses on service interactions: the use of social and behavioral change to encourage clients to access services (before services), to improve the client-provider interaction (during services), and to boost adherence and maintenance (after services). It includes considerations of social and cultural

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[49] Stanford Encyclopedia of Philosophy:
https://plato.stanford.edu/entries/rawls/#:~:text=The%20guiding%20idea%20is%20that,of%20Rawls%27s%20theory%20of%20justice.
[50] Internet Encyclopedia of Philosophy, Care Ethics: https://iep.utm.edu/care-ethics/
[51] Internet Encyclopedia of Philosophy, Care Ethics: https://iep.utm.edu/care-ethics/
[52] Price, 2016: URL

norms that impact service use (or non-use) and delivery, the physical environment in which services are delivered, and the communication that takes place between a client and provider[53].

AI and Ethics

The United Nations Educational, Scientific and Cultural Organization (UNESCO) produced the first-ever global standard on AI ethics – the 'Recommendation on the Ethics of Artificial Intelligence' in November 2021. According to the recommendation, there are ten core principles that compose a human right's centered approach to the ethics of AI: Proportionality and Do No Harm, Safety and Security, Right to Privacy and Data Protection, Multi-stakeholder and Adaptive Governance & Collaboration, Responsibility and Accountability, Transparency and Explainability, Human Oversight and Determination, Sustainability, Awareness & Literacy, Fairness and Non-Discrimination[54]. Along with the framework, UNESCO provides both policy and implementation recommendations for AI ethics.

The World Health Organization (WHO) also released the "Ethics and governance of artificial intelligence for health: Guidance on large multi-modal models" in January 2024. It includes the potential benefits and risks of use of LMMs in health care and medicine and approaches to the governance of LMMs that could best ensure compliance with guidelines and obligations for ethics, human rights and safety[55]. The graphic in Figure 5 from the WHO summarizes the main ethical principles for use of AI for health.

Figure 5

[53] John Hopkins University: URL
[54] UNESCO. (2024). Ethics of Artificial Intelligence.
https://www.unesco.org/en/artificial-intelligence/recommendation-ethics
[55] World Health Organization: URL

| Protect autonomy | Promote human well-being, human safety and the public interest | Ensure transparency, explainability and intelligibility |
| Foster responsibility and accountability | Ensure inclusiveness and equity | Promote AI that is responsive and sustainable |

According to the WHO, a responsible AI policy addresses the above principles and is adaptive to reflect the changing technology. The WHO also provided potential benefits and risks to using AI technology in various healthcare settings which are summarized in Figure 6

Figure 6

Use	Potential or proposed benefits	Potential risks
Diagnosis and clinical care	Assist in managing complex cases and review of routine diagnoses Reduce the communication workload of health-care providers ("keyboard liberation") Provide novel insights and reports from various unstructured forms of health data	Inaccurate, incomplete or false responses Poor quality training data Bias (of training data and responses) Automation bias Degradation of skills (of health-care professionals) Informed consent (of patients)
Patient-guided use	Generate information to improve understanding of a medical condition (as a patient or as a caregiver) Virtual health assistant Clinical trial enrolment	Inaccurate, incomplete or false statements Manipulation Privacy Less interaction between clinicians and patients Epistemic injustice Risk of delivery of care outside the health system
Clerical and administrative tasks	Assist with paperwork and documentation required for clinical care Assist in language translation Completion of electronic health records Draft clinical notes after a patient visit	Inaccuracies and errors Inconsistent responses depending on prompts

Large language models and AI technologies are being used to assist health professionals in clerical, administrative and financial aspects of practicing medicine. Medicine exposes physicians and other healthcare professionals in many settings to large amounts of paperwork for recording patient information and data in electronic health records, billing in private, insurance or public health-care systems and other administrative tasks. Documentation constitutes a large amount of physician's time and is a leading cause of physician burnout[56]. Utilizing technology for such administrative tasks returns to health-care professionals their most valuable commodity –time– both to reduce burn-out and to allocate more time to providing care for patients. While

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[56] World Health Organization:
https://iris.who.int/bitstream/handle/10665/375579/9789240084759-eng.pdf?sequence=1

the benefits can improve patient experience and human-wellbeing, some risks include errors from inaccuracies, mistakes (for example in transcription, translation or simplification) or "hallucinations", and inconsistencies from using the technology. Therefore, the WHO recommends that most clerical and administrative functions not be completely automated[57].

According to Cognilytica, "AI is a powerful technology that has the potential to greatly benefit society. But, it's also critically important to consider the ethical implications of its use. By taking steps to ensure fairness, transparency, privacy, safety, explainability, human oversight, trustworthiness, and long-term impacts, AI can be intentionally created to align with human values and follow ethical standards[58].

Legal Considerations

Compliance with the law is the minimum standard for ethics and it is important to understand the legal and regulatory landscape when making business and technology decisions. This section will introduce the relevant laws and regulations with respect to insurance companies, artificial intelligence, data privacy, and data security & cyber attacks.

Insurance Industry Regulation

In the United States, the insurance industry is primarily regulated on a state-by-state basis This system is largely because of the McCarran-Ferguson Act of 1945, which grants states the authority to regulate insurance within their borders. All U.S. insurers are subject to regulation in their state of domicile, or where their headquarters are located, and in the other states where they

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[57] World Health Organization:
https://iris.who.int/bitstream/handle/10665/375579/9789240084759-eng.pdf?sequence=1
[58] Cognilytica.com: URL

are licensed to sell insurance. State insurance departments enforce regulations, review rate changes, and ensure insurers are financially solvent (able to meet their obligations)[59].

The Connecticut Department of Insurance regulates insurance and insurance-related entities and products for the State of Connecticut, where the Cigna Group is headquartered. It also offers programs that help persons to complete, file and/or appeal a decision on an insurance claim, and helps individuals and organizations with benefits administration[60]. The Connecticut Department of Insurance is at the forefront of regulating the use of AI in the insurance industry. In February 2024 they published "Bulletin No. 25: Use of Artificial Intelligence Systems by Insurers" which sets forth the Department's expectations for insurers' governance of the development, acquisition, and use of certain AI (as defined below) technologies, including the AI Systems. The Connecticut Department of Insurance requires that all Connecticut domestic insurers complete the annual Artificial Intelligence Certification[61]. Insurers in Connecticut must avoid violations of any Connecticut Unfair Insurance Practices Act (CUIPA) provisions. As such, insurers are expected to adopt practices, including governance frameworks and risk management protocols, that are designed to ensure that the use of AI Systems does not result in any unfair trade acts or practices prohibited under CUIPA[62]. To address this risk and ensure compliance with all applicable laws, the Connecticut Department of Insurance recommends that insurers adopt and implement controls specifically related to their use of AI. Robust governance, risk management controls, and internal audit functions play critical roles in mitigating the risk that decisions driven by AI Systems will violate any applicable insurance laws and regulations[63]. The department also requires all insureds authorized to do business in the state to develop,

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[59] Insurance Information Institute: URL
[60] Connecticut Insurance Department: URL
[61] Connecticut Department of Insurance, Buletin MC-25: URL
[62] Connecticut Department of Insurance, Buletin MC-25: URL
[63] Connecticut Department of Insurance, Buletin MC-25: URL

implement, and maintain a written program (an "AIS Program") for the responsible use of AI Systems that make or support decisions related to regulated insurance practices and products. The AIS Program should be designed to mitigate the risk of Adverse Consumer Outcomes and promote compliance with all applicable insurance laws and regulations[64].

Although most regulation occurs on the state level, the National Association of Insurance Commissioners (NAIC) serves to protect public interest, promote competitive markets, and improve state regulation of the insurance industry. The NAIC released their "Principles on Artificial Intelligence" which recommends that companies engaging in the insurance industry that play an active role in the AI lifecycle consider and uphold the following principles in their AI use: fair and ethical; accountable; compliant; transparent; secure, safe, and robust[65].

Additionally, employee sponsored health plans are governed under the Employee Retirement Income Security Act of 1974 (ERISA). Among other things, ERISA provides protections for participants and beneficiaries in employee benefit plans. ERISA requires plans to provide participants with plan information including important information about plan features and funding; provides fiduciary responsibilities for those who manage and control plan assets; requires plans to establish a grievance and appeals process for participants to get benefits from their plans; and gives participants the right to sue for benefits and breaches of fiduciary duty[66]. ERISA limits court remedies only to the reinstatement of benefits and it has very specific appeals processes, which brings challenges around denials.

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[64] Connecticut Department of Insurance, Buletin MC-25: URL
[65] National Association of Insurance Commissioners: URL
[66] U.S. Department of Labor: URL

Artificial Intelligence Law

The AI legal landscape is a complex and evolving one, with new issues emerging as AI technology continues to develop. The European Union (EU) has robust regulation governing the use of AI. The European Parliament adopted the EU Artificial Intelligence Act (AI Act) on March 13, 2024. The AI Act is the world's first standalone law governing AI and is intended to establish a global legal framework that promotes trustworthy AI[67]. The AI Act establishes rules for data quality, transparency, human oversight, and accountability across the EU. It also requires AI systems to meet certain transparency standards, such as: informing humans when they are interacting with a machine, providing that AI-generated content is identifiable, labeling AI-generated text, audio, and video content that informs the public on matters of public interest[68]. The AI Act adopts a risk-based approach for categorizing AI systems into four tiers. These tiers generally correspond to 1) the sensitivity of the data involved and 2) the particular AI use case or application[69]. The EU also created the EU AI Office which oversees implementation and enforcement of the AI Act. The consequences for noncompliance can be hefty, ranging from penalties of €35 million or 7 percent of global revenue to €7.5 million or 1.5 percent of revenue, depending on the infringement and size of the company[70].

While the EU has very specific legislation that governs the use of AI, the regulatory landscape in the United States is much more uncertain. The main federal guidance is the White House's "AI Bill of Rights", which was published in October of 2022. The Blueprint for an AI Bill of Rights is a guide for a society that protects all people from the threats associated with

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[67] Holland & Knight: URL
[68] Holland & Knight: URL
[69] Holland & Knight: URL
[70] Holland & Knight: URL

using AI and encourages responsible use of the technology[71]. The White House Office of Science and Technology Policy (OSTP) has identified five principles that should guide the design, use, and deployment of automated systems to protect the American public in the age of artificial intelligence. The principles include "Safe and Effective Systems", "Algorithmic Discrimination Protections", "Data Privacy", "Notice and Explanation", and "Human Alternatives, Consideration, and Fallback"[72].

In addition to the White House, the National Institute of Standards and Technology (NIST) released its Artificial Intelligence Risk Management Framework (AI RMF 1.0), a guidance and risk management document for voluntary use by organizations using AI systems. According to the framework, "core concepts in responsible AI emphasize human centricity, social responsibility, and sustainability". AI risk management can drive responsible uses and practices by prompting organizations and their internal teams who design, develop, and deploy AI to think more critically about context and potential or unexpected negative and positive impacts. Understanding and managing the risks of AI systems will help to enhance trustworthiness, and in turn, cultivate public trust[73].

The "Algorithmic Accountability Act of 2022" was introduced to Congress in the House of Representatives in February of 2022. The main features of the bill include directing the Federal Trade Commission to require impact assessments of automated decision systems and augmented critical decision processes, requiring companies to assess the impacts of the automated systems they use and sell, creating new transparency about when and how automated

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[71] The White House, Blueprint for the AI Bill of Rights: URL
[72] The White House, Blueprint for the AI Bill of Rights: URL
[73] National Institute of Standards and Technology: URL

systems are used[74]. The House referred the bill to the Subcommittee on Consumer Protection

and Commerce, but there has been no action since April of 2022.

In absence of federal legislation, states are publishing their own recommendations for

responsible AI use and some have begun to restrict certain uses of AI, specifically with profiling

and employment. California and Colorado lead states with two AI laws each, both of them with

AI provisions in broader data privacy laws they've passed as well as in stand-alone laws.

California's 2018 consumer privacy law, the first comprehensive data privacy law enacted in the

United States, includes a provision that regulates companies' use of AI in profiling by allowing

consumers to opt out of having the technology make decisions about them based on an analysis

of their personal data, including health insurance contexts. Colorado also passed a consumer

privacy law similar to California's, but they also passed SB21-169,"Protecting Consumers from

Unfair Discrimination in Insurance Practices", which is an insurance-specific law that regulates

against using AI in a way that would discriminate in coverage decisions. The legislation holds

insurers accountable for testing their big data systems - including external consumer data and

information sources, algorithms, and predictive models - to ensure they are not unfairly

discriminating against consumers on the basis of race, color, national or ethnic origin, religion,

sex, sexual orientation, disability, gender identity, or gender expression[75].

Data Privacy & Security

Although there are no federal data privacy laws and no centralized data protection

agencies in the United States, companies that work with clients, customers and employees in the

European Union must be aware of the principles that govern the General Data Protection

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[74] H.R.6580 - Algorithmic Accountability Act of 2022: URL
[75] Colorado Department of Regulatory Agencies: URL

Regulation (GDPR). It governs how the personal data of individuals in the EU may be processed and transferred. The GDPR requires companies working with or within the European Union to implement data protection policies and procedures that ensure transparency and accountability[76]. The GDPR outlines data protection principles (lawfulness, fairness and transparency, purpose limitation, data minimization, accuracy, storage limitation, integrity and confidentiality, and accountability), accountability and compliance standards, data security measures, data processing procedures, and consent[77].

In the United States, there is regulatory uncertainty with respect to data privacy overall but some governed areas such as healthcare. The Health Insurance Portability and Accountability Act of 1996 (HIPAA), is a federal law that requires the creation of national standards to protect sensitive patient health information from being disclosed without the patient's consent or knowledge. The goal of HIPAA is to make sure that individuals' health information is properly protected while allowing the flow of health information needed to provide and promote high-quality healthcare, and to protect the public's health and well-being. Insurance companies must comply with HIPAA regulations to properly handle private health information[78] On the state level, the California Consumer Privacy Act (CCPA) has the most robust protections for its citizens. The CCPA provides California consumers with a number of privacy protections, including right to access, delete, and opt-out of the "sale" of their personal information[79].

Both the GDPR and HIPAA have data security protections that make companies responsible if there is a security breach. The GDPR requires that personal data must be processed securely using appropriate technical and organizational measures. The Regulation does not

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[76] Factorial: URL
[77] GDPR: URL
[78] Center for Disease Control and Prevention: URL
[79] State of California Department of Justice: URL

mandate a specific set of cyber security measures but rather expects companies to take 'appropriate' action with data protection. In addition, The HIPAA Security Rule requires physicians to protect patients' electronically stored, protected health information (known as "ePHI") by using appropriate administrative, physical and technical safeguards to ensure the confidentiality, integrity and security of this information[80].

As companies use AI, they open themselves up to exposure in the legal areas mentioned in this section. Responsible AI policies should focus on complying with relevant regulations. Companies with effective AI policies limit the financial risks of noncompliance and establish themselves as ethical adopters of AI in their industries.

Questions

1. What industry does Cigna operate in? What is Cigna's market share? What is Cigna's current stock price?

2. What is Cigna's claim's review process?

3. How would you explain how predictive technology works in the context of this case?

4. What is PxDx's role in Cigna's claims review process?

5. How is AI used in other industries? Compare other industries' use of AI to the medical claims review process.

6. What was the Cigna stock price when the lawsuits were filed? How was the stock price affected by the lawsuits? How has it been since?

7. What is Cigna's AUM?

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[80] American Medical Association: URL

8. What percentage of Cigna Group's revenue comes from health insurance? What does this tell you?

9. Compare Cigna's financial metrics to its competitors. Where are they succeeding? Where are they falling short?

10. Which ethical frameworks are most applicable in this case?

11. Discuss the legal landscape. Which legal regulations apply to the case? What do they suggest?

12. How would you construct an AI policy for an insurance company?

13. Final Question: As the CEO (the decision maker), what do you suggest? Do you suggest that Cigna uses the PxDx algorithm as is? Do you suggest that Cigna stops using the PxDx algorithm altogether? Do you use the technology with some stipulations and policy? What is that policy? Why is that policy the best?